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**The Distribution of Adenomyomas
Containing Uterine Mucosa**

By

THOMAS S. CULLEN, M. B.
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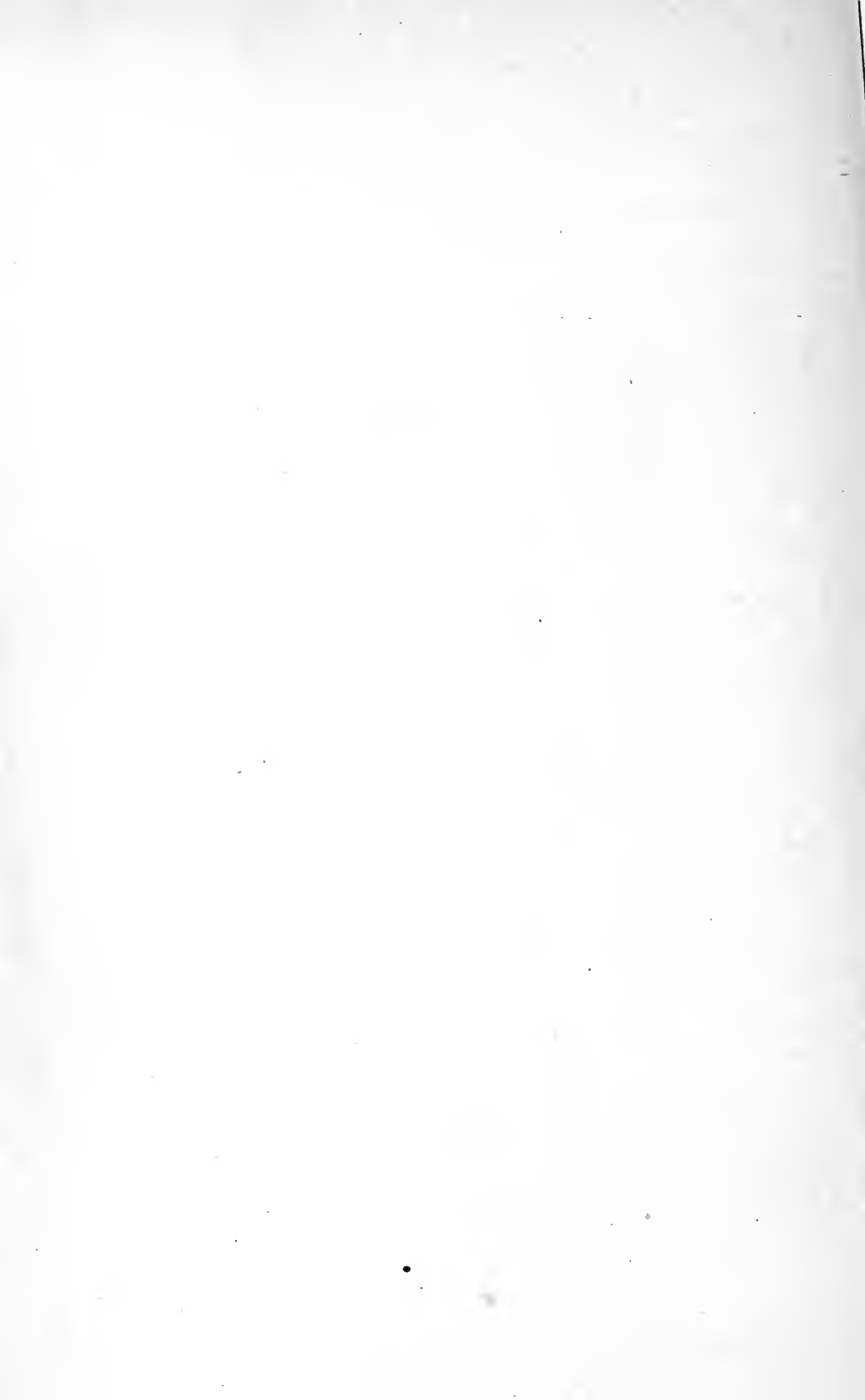
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THE DISTRIBUTION OF ADENOMYOMAS
CONTAINING UTERINE MUCOSA

BY

THOMAS S. CULLEN

Professor of Clinical Gynecology in the Johns Hopkins University and Visiting
Gynecologist to the Johns Hopkins Hospital

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P R E F A C E

This paper was the address in Surgery before the Western Surgical Association in Kansas City, December, 1919.

I have had it reprinted in order that my friends may have it in separate form.

I wish to express my indebtedness to Mr. Max Brödel, Director of the Department of Art in Medicine, for the excellent illustrations.

Oct. 1, 1920.

THOMAS S. CULLEN.

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THE DISTRIBUTION OF ADENOMYOMAS CONTAINING UTERINE MUCOSA *

THOMAS S. CULLEN, M.B.

BALTIMORE

At a meeting of the Johns Hopkins Hospital Medical Society in March, 1895, I reported my first case of adenomyoma of the uterus, and since then I have been on the lookout for tumors of this character. From time to time the results of my labors have been recorded either in book form or in the literature.

I have been amazed at the widespread distribution of these tumors consisting of nonstriped muscle with islands of uterine mucosa scattered throughout them. In May, 1919, I read a short paper on the subject before the New York State Medical Society at Syracuse. This fragmentary article was published¹ a few months later.

In the present paper I shall not attempt to cover the literature on the subject, but I shall confine my remarks to a description of the cases and of the pathologic material that I have personally observed since reporting my previous cases.

Thus far I have found uterine mucosa in ten places in the body as indicated in Figure 1, and I shall therefore discuss the subject under the following heads:

1. Adenomyoma of the body of the uterus.
2. Adenomyoma of the rectovaginal septum.
3. Adenomyoma of the uterine horn, or of the fallopian tube.
4. Adenomyoma of the round ligament.
5. Uterine mucosa in the ovary.
6. Adenomyoma of the utero-ovarian ligament.
7. Adenomyoma of the uterosacral ligament.
8. Adenomyoma of the sigmoid flexure.
9. Adenomyoma of the rectus muscle.
10. Adenomyoma of the umbilicus.

* Address in surgery delivered before the Western Surgical Association in Kansas City, December, 1919.

* From the Gynecologic Department of the Johns Hopkins University and of the Johns Hopkins Hospital.

1. Cullen, T. S.: The Distribution of Adenomyomata Containing Uterine Mucosa, *Am. J. Obst.* **80**:130 (Aug.) 1919.

ADENOMYOMA OF THE BODY OF THE UTERUS

These tumors may be limited to the anterior or posterior walls of the uterus, or they may form a mantle or zone just outside the uterine mucosa. When the uterus is cut open, it is noted that the anterior or posterior wall, or both, are thickened. This increase is due to a coarsely striated condition of the muscle directly beneath the uterine mucosa. Where the uterine walls are especially thick, the diffuse myomatous growth may be several centimeters in thickness. Scattered throughout the diffuse growth, one often notes small cystlike spaces filled with chocolate-colored contents, and not infrequently with a loupe one can detect here and there uterine mucosa penetrating into the diffuse growth.

Occasionally a cystlike space, 1 cm. or more in diameter, may be found in the thickened uterine wall. Such a space will usually be lined with a velvety membrane about 1 mm. thick, and the cavity will be filled with the characteristic chocolate-colored contents—old menstrual blood.

The line of demarcation between the normal outer uterine muscular wall and the diffuse myomatous growth just beneath the mucosa is invariably sharply defined, but the two are nevertheless so closely blended that it would be absolutely impossible to separate them. Occasionally such a uterus will contain one or more small discrete myomas.

The histologic picture in a typical case is very characteristic: The uterine mucosa is often of normal thickness and looks perfectly natural, but as we approach the underlying diffuse myomatous tissue the mucosa is seen to penetrate it in all directions, sometimes as an individual gland; but often large areas of mucosa are seen extending into the depth. In favorable sections, one can follow a prolongation of the mucosa half way through the uterus. Where the diffuse myomatous growth ends, the outward extension of the glands also ends.

In the course of time, portions of the diffuse adenomyoma may project into the uterine cavity and be expelled through the cervix as submucous adenomyomas. In other instances a portion of the growth is forced to the outer or peritoneal surface forming a subperitoneal adenomyoma. Such a myoma is prone to become cystic, and the cyst cavity or cavities will be filled with chocolate-colored contents.

Symptomatology.—It is not difficult to figure out to what symptoms an adenomyoma of the uterus will usually give rise. In the first place, the mucosa lining the uterine cavity is perfectly normal, hence, as a rule, we shall have no intermenstrual discharge. With the advent of the menstrual period, however, the patient will not only lose her normal quota of blood, but this will be greatly increased by the flow coming from the large areas of mucosa which are scattered throughout the diffuse myomatous growth.

There will, as a rule, be a great deal of pain in the uterus at the period due primarily to the swelling of the mucosa which is scattered throughout the uterine walls. The small and medium-sized cystic spaces filled with chocolate-colored fluid are due to the accumulation of old menstrual blood in areas where the continuity of the mucosa with the uterine cavity has been interrupted. Such areas also undoubtedly add to the feeling of distention and discomfort at the period.

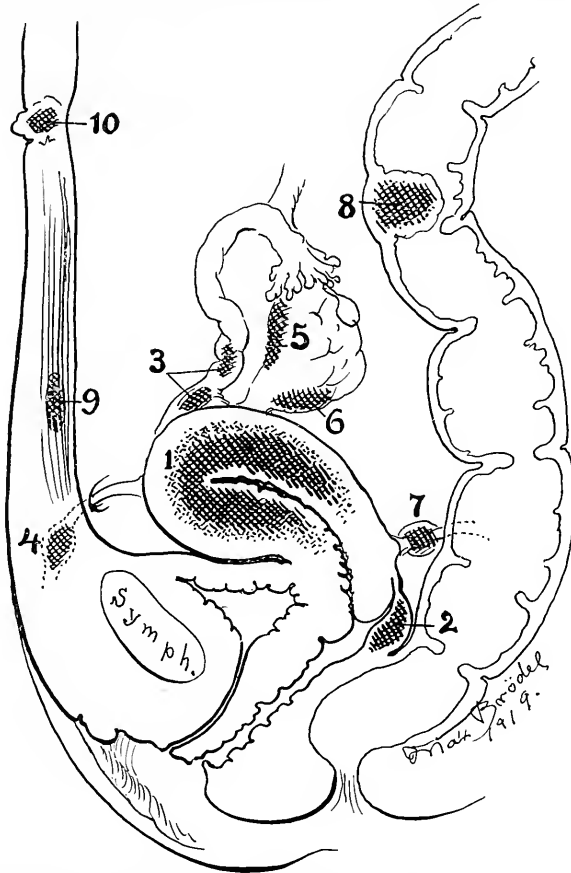


Fig. 1.—The various points at which I have found uterine mucosa: 1, in adenomyoma of the body of the uterus; 2, in adenomyoma of the rectovaginal septum; 3, in adenomyoma of the uterine horn or fallopian tube; 4, in adenomyoma of the round ligament; 5, in the hilum of the ovary usually unaccompanied by a myomatous growth; 6, in the utero-ovarian ligament; 7, in the uterosacral ligament; 8, in the sigmoid flexure; 9, in the rectus muscle; 10, in adenomyoma of the umbilicus.

On bimanual examination, the uterus is found to be normal in size and perfectly smooth, or, on the other hand, it may be two or three times its normal size and slightly nodular. The introduction of a uterine sound usually reveals a normal cavity, and on curettage normal mucosa is invariably found. From the clinical findings one can often make a fairly accurate diagnosis of adenomyoma.

Generally speaking, removal of such a uterus is clearly indicated. Frequently this proves rather difficult on account of the tendency for such an organ to become densely adherent to surrounding structures.

I have discussed adenomyomas of the body of the uterus in such detail elsewhere² that a further consideration of the subject here would be superfluous.

CASE 1.—A bicornate uterus with diffuse adenomyoma of the right horn. Pregnancy in the right fallopian tube. Adenomyoma and hydrosalpinx of the left tube. Large cyst of the left ovary (Figs. 2, 3, 4, 5 and 6).

History (Church Home and Infirmary, No. 19173).—Mrs. H. T., aged 36, admitted to the Church Home and Infirmary, May 21, 1918, and referred to me by Dr. Marshall G. Smith, complained of an abdominal tumor, increasing pain in the right lower abdomen and vaginal bleeding.

The menstrual periods as a rule had been regular, lasting two days, and she had had pain in the right lower abdomen. Latterly the periods had been irregular. The last normal period began probably Feb. 25, 1918. During March and April, she had had no menstrual period, but had suffered from the usual right-sided pain. She again had noted a flow on May 1, which had lasted one day. Two days had elapsed and then she had had a flow for seven days. The patient had been married twice, but had had no children and no miscarriages.

On examination under anesthesia, I made out what appeared to be a myomatous uterus which extended well up toward the umbilicus.

Operation and Result.—Operation was performed May 28. When the abdomen was opened we found the tube on the right side 4 cm. in diameter, and adherent in the pelvis. The uterus was bicornate, and the right side was three times the natural size. The surface of one of the nodules had a brownish appearance suggestive of an adenomyoma. On the left side was an ovarian cyst which filled the pelvis and was glued down by adhesions. We removed the structures from left to right and then took out the appendix which was tied down. The abdomen was closed without drainage. The patient made a good recovery and was discharged, June 18.

Examination of Specimen (Gyn. Path. No. 25515).—The specimen consists of the pelvic structures intact (Figs. 2 and 3). The uterus has been amputated through the cervix. This portion consists of a right and left uterine horn. The right horn is 9 cm. long and 5.5 cm. broad. This has two or three small bosses projecting from its surface, the largest being 1.5 cm. in diameter. The surface of the last and some of the others and also the adjoining peritoneum has a rusty appearance, instantly suggesting adenomyoma. On the anterior surface of the uterus are a few adhesions, on the posterior surface, many fanlike adhesions.

Intimately blended with the right enlarged uterine horn is a left uterine horn. The two horns are separated from each other by a cleft, about 1.5 cm. deep anteriorly, but very shallow posteriorly. The left horn to the point of amputation of the cervix is 7 cm. long and about 3 cm. broad.

2. Cullen, T. S.: Adenomyoma uteri diffusum benignum, Johns Hopkins Hospital Reports 6:133, 1896; Adenomyome des Uterus, Berlin, August Hirschwald, 1903; Adenomyoma of the Uterus, J. A. M. A. 50:107 (Jan. 11) 1908; Adenomyoma of the Uterus, Philadelphia, W. B. Saunders Company, 1908.

On section, it is seen that both the right and the left horns have separate cavities. These apparently unite near the external os.

The right horn on section presents the typical picture of adenomyoma (Fig. 4). The anterior wall of the right horn reaches a thickness of more than 4.5 cm. There is no vestige of normal muscle persisting. The entire wall of the uterus both anteriorly and posteriorly shows the striated picture characteristic of adenomyoma, and scattered everywhere throughout both the anterior and posterior walls are chocolate-colored areas varying from 1 mm. to 5 mm. in diameter, while small chocolate-colored cysts are also found in the myomatous nodules on the surface of the uterus.

The walls of the left uterine horn present the normal appearance.

The right tube near the uterus is about 8 mm. in diameter. As it passes outward and downward, it reaches a diameter of 4 cm. On section, it is found to be filled with what looks like organized blood (Fig. 3).

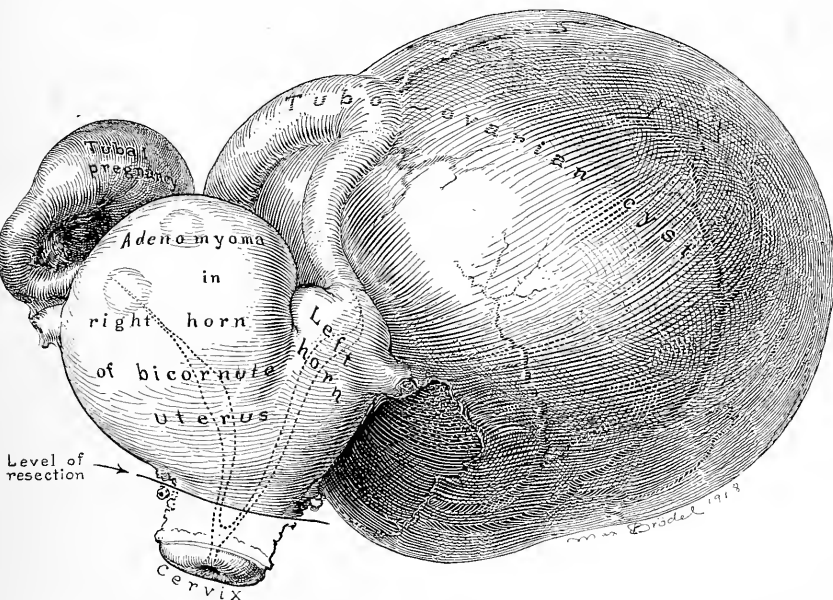


Fig. 2 (Case 1).—A bicornuate uterus with adenomyoma of the right horn; right tubal pregnancy; enlarged left tube, the inner end showing adenomyoma (Fig. 6), the outer end hydrosalpinx; left ovarian cyst. For the finer details see Figure 3.

The left ovary has been transformed into a thin-walled multilocular cyst, 16 cm. in diameter. Its walls in places are as thin as parchment. The left tube at the uterine cornu is fully 1 cm. in diameter. As it passes outward it comes to measure about 2.5 cm. in diameter, and the walls are very thin.

Histologic Examination.—Right Uterine Horn: Sections have been made embracing the entire thickness of the uterus (Fig. 5). The musculature is divided up into diffuse whorls, varying from 5 mm. to 3 cm. in diameter. Some of these are oval or circular; others are long and run parallel to the cavity of the uterus. Scattered everywhere throughout the walls of the uterus are dark areas containing minute cavities in their centers. Some of these cavities have a definite lining fully 1 mm. in thickness. In various places are oval or irregular cystlike spaces varying from 1 to 4 mm. in diameter. The



Fig. 3 (Case 1).—Bicornuate uterus, right tubal pregnancy, enlarged left tube, left ovarian cyst. Viewed from the front. The uterus has been amputated through the cervix. The right cornu is much enlarged and projecting from its surface are two small fibroids. Beneath the anterior fibroid, the surface of the uterus is somewhat puckered. At this point the adenomyoma had extended to the peritoneal surface. A longitudinal section of the right horn is shown in Figures 4 and 5. The left uterine horn is relatively small. The left tube in its inner portion is almost solid and consists of typical adenomyomatous tissue (Fig. 6). The outer end of the tube has been converted into a hydrosalpinx. The ovarian cyst seemed to be of the retention cyst variety.

majority of these are partially filled with blood. Even with the naked eye the diagnosis of diffuse adenomyoma occupying both the anterior posterior uterine walls is perfectly evident.

With a higher power, islands of normal-appearing uterine mucosa are seen scattered everywhere throughout the diffusely thickened uterine walls, and the glands extend right up to the peritoneal surface. Even the isolated glands are accompanied by the characteristic stroma. In this case, the muscular tissue immediately around the islands of mucosa is unusually dense. Some of

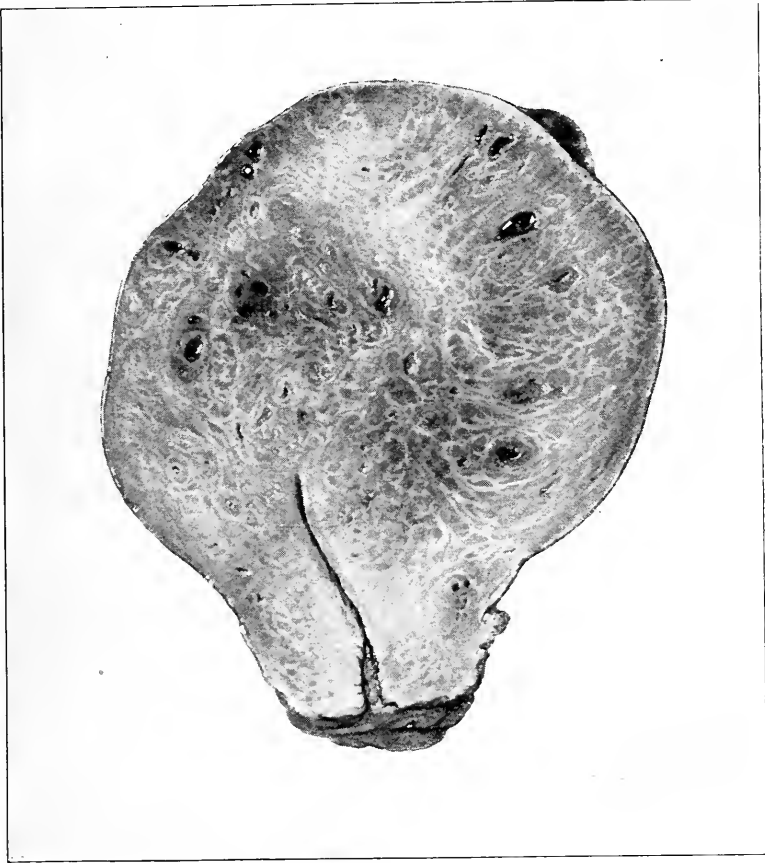


Fig. 4 (Case 1).—Adenomyoma of the right uterine horn. This is a longitudinal section through the right horn of the uterus shown in Figure 3. The entire body of the uterus shows a diffuse myomatous thickening, and scattered throughout the walls are small cystlike spaces. These were in the main filled with chocolate-colored contents. The diffuse adenomyoma extends right up to the peritoneal surface at most points. At the fundus a discrete myomatous nodule can be seen. For the low power picture of the adenomyoma see Figure 5.

the blood at the menstrual period has undoubtedly escaped to the peritoneal surface, thus accounting for the rusty appearance noted on the surface of the uterus at operation.

This is the most widespread adenomyoma of the uterus that I have ever seen. The mucosa lining the cavity of the uterus is perfectly normal. In a few places, however, it shows some tendency to extend into the underlying muscle.

Right Side: Sections from the blood clot in the right tube show quantities of placental villi. On some of these both Langerhans' layer and syncytium are still visible, and one is also able to make out syncytial buds. At other points, the villi have lost all trace of epithelium. No cellular structure is visible in the stroma, and the cells are recognized as mere shadows. Their contours are still perfectly preserved. We are dealing with a right-sided tubal pregnancy, and as we look back over the history we find that the menstrual cycle strongly indicated extra-uterine pregnancy, but that the relatively large size of the pelvic masses completely overshadowed the enlargement of the tube.

Left Side: As was noted macroscopically, the left tube even near the uterus is unusually large. A section taken 2 cm. beyond the uterine horn is 1 cm. in diameter. Even with the low power it is noted that it is almost solid (Fig. 6). Its center is occupied by diffuse myomatous tissue, and scattered everywhere throughout this are glands which resemble in every particular uterine glands. The majority of these lie in direct contact with the muscle, but here and there are several glands embedded in the characteristic stroma of the uterine mucosa. Some of the glands are dilated and at one or two points we can see miniature uterine cavities. We have in this tube an adenomyoma of the uterine type, and I am totally at a loss to explain its mode of origin.

Sections from the large ovarian cyst show that the largest cavity is lined with epithelium that is almost flat. In the walls of this large cyst are a few glandlike spaces lined with cuboidal epithelium. The cyst walls are composed of laminated fibrous tissue.

In this case, we have a most unusual combination: a bicornate uterus, the right horn of which presents a most beautiful example of diffuse adenomyoma; a right tubal pregnancy; adenomyoma of the inner end of the left tube and a hydrosalpinx of its outer end, and finally, a large multilocular cyst of the left ovary apparently of the retention cyst variety.

ADENOMYOMA OF THE RECTOVAGINAL SEPTUM³

I wish to lay unusual emphasis on this group of cases. Many of you have undoubtedly seen them, but may not have recognized them. They are of unusual importance, and, if overlooked, will in time cause the patient to become a chronic invalid, and in some instances will undoubtedly lead to her death.

In 1913, Dr. D. S. D. Jessup of New York, knowing my interest in adenomyomas, sent me specimens of two tumors of this class. The mail on the following morning brought me the *Proceedings of the Royal Medical and Chirurgical Society of London*, containing Cuthbert Lockyer's splendid article on "Adenomyoma of the Rectovaginal Septum." These two communications set me thinking, and I at once felt sure that two of my cases undoubtedly belonged in this category,

3. Cullen, T. S.: Adenomyoma of the Rectovaginal Septum, *J. A. M. A.* **62**:835 (March 14) 1914; *Tr. South. Surg. & Gynec. A.* **26**:106, 1913; A Further Case of Adenomyoma of the Rectovaginal Septum, *Surg., Gynec. & Obst.* **20**:260 (March) 1915; Adenomyoma of the Rectovaginal Septum, *Bull. Johns Hopkins Hosp.* **28**:343 (Nov.) 1917.



Fig. 5 (Case 1).—Diffuse adenomyoma of the uterus. This is a longitudinal section through the uterus, showing a diffuse myomatous thickening, and where the muscle is arranged in whorls there are dilated, forming round, oval, or irregular cyst cavities. The glands extend right up to the muscular wall. A slit *a*, noted in the lower and right portion of the picture, represents the uterine cavity. The glands in the whole present the usual appearance. The glands in the adenomyoma of the uterus.



through the right horn of the uterus shown in Figures 3 and 4. The longitudinal
It can be traced upward and toward the left. The glands of the mucosa on the
thickened and the anterior wall markedly so. The greater part of the uterus presents
nearly always a gland or a colony of glands in its center. Many of the glands
to the peritoneal surface. The picture is that of a most pronounced diffuse

although the histologic examination had given no inkling of such a condition. I had many more sections made and was finally rewarded by finding in each case the typical picture in other portions of the specimen. Since then I have been on the lookout for this condition and have had nineteen cases.

Adenomyoma of the rectovaginal septum usually starts just behind the cervix, and on bimanual examination, one can feel in this region a small, somewhat movable nodule scarcely more than a centimeter in diameter. The rectal mucosa at this time can be made to slide perfectly over the tumor.

As the growth increases in size, it spreads out laterally and at the same time becomes blended with the adjacent anterior rectal wall. Later it may invade the broad ligaments, encircling the ureters, or may envelop pelvic nerves. With the extension of the growth, it may push down into the posterior vaginal vault forming definite and well-formed vaginal polypi, and finally, it may break into the vagina.

The histologic picture is typical of adenomyoma; even the vaginal polypi consist of nonstriped muscle and uterine mucosa covered over by vaginal mucosa. Where the growth has definitely broken through into the vagina, we have normal-appearing uterine mucosa lining portions of the vaginal vault.

The clinical picture in adenomyoma of the rectovaginal septum is typical. In the early stages, the patient comes complaining of much pain just before and at the beginning of the period especially at the time of defecation. On bimanual examination a small nodule is felt directly behind the cervix.

When the process is more advanced, the growth may measure 2 or 3 cm. across and may bulge slightly into the rectum, while in some cases there is already marked thickening of the anterior rectal wall for a distance of several centimeters, and at the period there may be some rectal bleeding.

The growth sometimes encircles one or both ureters. At the period, the tumor tissue naturally swells up, and it may so constrict one or both ureters that there is a damming back on one or both kidneys with consequent pain in the renal region. In other cases when the pelvic nerves are caught in the growth, excruciating pelvic pain may be experienced as soon as the tumor becomes congested at the time of menstruation.

Occasionally, as the growth progresses, the polypoid condition in the vaginal vault directly behind the cervix becomes very prominent, and in those cases in which the growth breaks through the vaginal mucosa, there may be a menstrual flow from the vaginal vault even when a supravaginal hysterectomy has been performed some years before for uterine myomas. Finally, if nothing is done, the pelvis

may become so choked with the growth that the patient dies from the extreme loss of blood coupled with partial intestinal obstruction.

In the early stages of the growth, this condition should be readily diagnosed. It cannot at this time be confused with any other pelvic lesion.

Treatment.—In the very early stages it may be possible to open up the vaginal vault just behind the cervix and remove the tumor. As

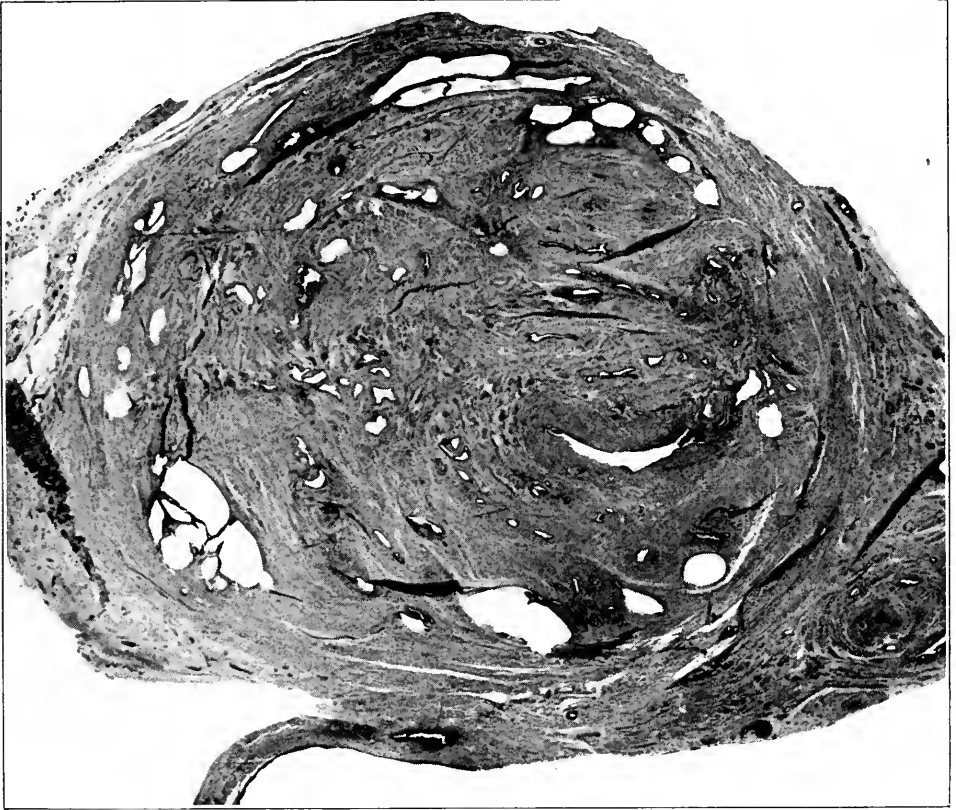


Fig. 6 (Case 1).—Adenomyoma of the left fallopian tube. This section was taken from the left tube seen in Figure 2, about 2 cm. distant from the uterine horn. Here the lumen of the tube is almost completely replaced by a diffuse myomatous growth with isolated glands or groups of glands scattered throughout it. The majority of the glands lie in direct contact with the muscle, a few are surrounded by the characteristic stroma of the uterine mucosa. Quite a number of the glands in the outlying portions have become dilated, forming small cysts. Hitherto I have never seen the lumen of the tube occupied by an adenomyoma. The distal end of the tube formed a hydrosalpinx.

a rule, however, it involves the posterior part of the cervix and cannot be shelled out.

When the nodule is 1 cm. or more in diameter and is still freely movable, the abdomen should be opened, the ureters isolated and the uterus with a cuff of vaginal mucosa removed. If the vagina is cut



Fig. 7 (Case 2).—Adenomyoma of the rectovaginal wall as seen on vaginal inspection. This water color of the uterus and accompanying vaginal cuff was made by Mr. Brödel shortly after operation. The cervix itself is practically normal. Projecting from its surface are a few small Nabothian follicles. Just posterior to the cervix is a slightly bluish black cystic area about 6 mm. in diameter. This bluish black appearance is, of course, due to the accumulation of old menstrual blood in a small cystic area in the adenomyoma. The uterus itself is little if any enlarged. For the appearance of the adenomyoma on section, see Figure 8, and for the microscopic picture, see Figure 9.

completely across, one can then lift the uterus and vaginal cuff up and with more ease separate the adherent vaginal cuff from the rectum. Sometimes it will be necessary to remove a wedge of the adherent anterior rectal wall with the uterus.

In cases in which the growth is widespread, a preliminary permanent colostomy is imperative. Later the pelvic structures can be removed *en bloc*. The removal of an extensive adenomyoma of the rectovaginal septum is infinitely more difficult than a hysterectomy for carcinoma of the cervix.

When a hysterectomy has been performed, and a small portion of the growth has been left on the rectum, radium seems to have held the rectal growth in check.

Since my last paper on adenomyoma of the rectovaginal septum appeared I have had ten more cases. The majority of these were early cases, and it is in the early cases that we naturally get the best results. History will undoubtedly repeat itself. Twenty-five years ago, a subacute or chronic appendix was rarely removed; but appendix abscesses were drained. Now the appendix is, in the vast majority of cases, removed in time. In less than ten years, I feel sure that the surgeon will recognize and operate on these adenomyomas of the rectovaginal septum long before the wall of the rectum or the broad ligaments have been involved. Given a small nodule directly behind the cervix with little evidence of pelvic infection, the diagnosis is relatively certain. If the abdomen is then opened and the rectum is found lifted up and adherent to the posterior part of the cervix, the chances are nine out of ten that an adenomyoma of the rectovaginal septum exists. When early operation is performed in these cases, a certain number of our "mild pelvic inflammatory cases" that heretofore have gone from bad to worse will be cured. In the first week of November of this year, I saw three early cases of adenomyoma of the rectovaginal septum — all of the patients being residents of Baltimore.

Recently I received a letter from a surgeon in South America in which he sketched his case from the early to the inoperable stages. The history is so graphically given that I believe we shall all profit by hearing it.

Valparaiso, Oct. 18, 1918.

Dear Sir:

Having found your articles on "Adenomyoma of the Recto-Vaginal Septum" of special interest, I take the liberty of sending you details of a case which was a puzzle to two other surgeons and myself until I luckily saw a synopsis of your article on this disease in *Surgery, Gynecology and Obstetrics*. The said article cleared up a mystery which I had been trying to solve for months, as it is impossible to find details of such cases in well-known text-

books in English, German or French. I think it will be of interest for you to know of such a case and hope you will have patience to read this letter which I make as short as possible.

Mrs. H., aged 30, nullipara, of good health, married two years ago, consulted us (in British and American Hospital) at the beginning of December, 1917, complaining of lumbago. On making a vaginal examination, we asked her about the menses which she said had been of late painful on the right side; the uterus was normal in position, size, consistency, etc. On the right side, the ovary was painful, but the puzzle was that she had a nodule especially hard and painful near the uterus which we took to be localized parametritis. We advised her to take douches, baths, ichthyol suppositories, etc., but seeing we got no result and that the pain was excruciating during the next period we decided to make a laparotomy.

On January 3, we performed a median laparotomy finding a right ovary large and of a very dark, unhealthy color. The nodule mentioned before was in the broad ligament right over the vagina, and it being impossible to remove it by abdomen, we resolved to leave it. The uterus was normal so we left it as it was, removing the ovary.

For three months, the patient experienced relief in symptoms, but on the fourth month menstruation was very painful and the pain radiated down to the thigh. We made again a vaginal examination and greatly to our disappointment found now two hard nodules, the same one as before much increased in size and a second one in the recto-vaginal septum which was easier to touch by rectal examination. The pain on palpation was terrible, so we had to give the patient a few drops of ether to examine carefully.

Seeing the condition of affairs, we had a consultation with a third surgeon and he was as much puzzled as we were. We decided to remove these little tumors by the vaginal route.

On May 28, we removed the two tumors by the vaginal route and our pathologist reported adenocarcinoma of an unusual type.

Looking for some information on this subject, I came across the article already mentioned and immediately sent for the more lengthy article in the *Johns Hopkins Bulletin* which I received the day before yesterday and which has cleared up the condition of affairs to us and corrected the pathologist's diagnosis.

Unluckily our patient's condition is now too bad for us to think of doing a complete hysterectomy and we think she will not live very long. She has not had as yet any rectal hemorrhage, but she has had ovarian insufficiency, very irregular menstruation and her general state is very poor. Locally the condition of the pelvis is one firm mass as you say, like glue.

As I have not been able to procure your former articles, I beg your patience to answer one or two questions by post.

Where does this abnormal muscular and glandular tissue come from? From the uterus, or are these sometimes remains of fetal tissue or rather embryonic tissue which suddenly give rise to the growth?

Thanking you for the special service rendered to us through your articles and hoping you will let me know of any further researches in this line, believe me,

Yours truly,

JOHN WILSON, M.D.

REPORT OF CASES OF ADENOMYOMA OF THE RECTOVAGINAL SEPTUM
HITHERTO UNPUBLISHED

CASE 2 (Septum Case 10).—*Adenomyoma of the rectovaginal septum recognized as an indurated area just posterior to the cervix, and by a small bluish black cyst shining through the vaginal mucosa* (Figs. 7, 8 and 9).

History (C. H. I. No. 18650).—Mrs. M. L., aged 41, was admitted to the Church Home and Infirmary, March 6, 1918, complaining of pain in the right



Fig. 8 (Case 2).—Adenomyoma of the rectovaginal septum. This is a longitudinal section of the uterus and vaginal cuff seen in Figure 7. Near the internal os are a few small cysts, otherwise the uterus presents the normal appearance. The anterior vaginal wall is normal. In the posterior vaginal wall near the cervix is an area of thickening with small dark areas scattered throughout it. On histologic examination (Fig. 9), it presents the typical picture of an adenomyoma.

lower abdomen associated with menstruation. Her general health had not been good. She had had pleurisy in 1916.

Her menses began at 13, were regular, painful and lasted seven days. Since November, 1917, the periods had been about three weeks apart and exceedingly painful. The last period was shortly before her admission.

Her present illness dated back one and a half years when she had an acute attack of pain in the right lower abdomen reaching to the back. This was definitely associated with menstruation. She had always gone to bed on the first day of the period and at times would become giddy and faint. For a year and a half, there had been a great deal of pain in the right lower abdomen at the time of the period. This pain would be sharp and radiating.

Examination.—When the patient was admitted to the hospital, she was in a very nervous and run down condition and her period was just over. Dr. Edmond H. Teeter, the resident who made a pelvic examination, told me

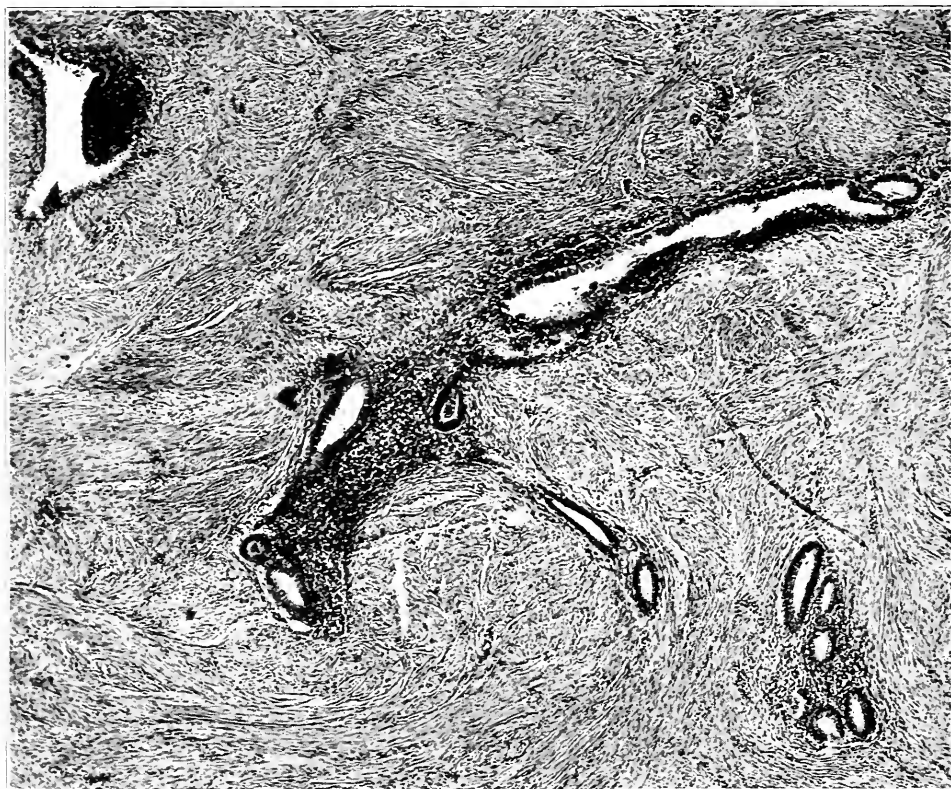


Fig. 9 (Case 2).—Adenomyoma of the rectovaginal septum. The majority of the glands are accompanied by the characteristic stroma of the mucosa. A few lie in direct contact with the muscle. For the appearance before operation, see Figure 7. A longitudinal section of the uterus and rectovaginal septum is shown in Figure 8.

before I had seen the patient that she had an adenomyoma of the rectovaginal septum. This was perfectly definite, as just posterior to the cervix was an area of induration about 2 or 3 cm. across and probably 1.5 to 2 cm. thick. On rectal examination, the anterior rectal wall seemed splinted.

Operation and Result.—March 26, 1918, we made a median incision and found a corpus luteum cyst, 5 cm. in diameter, on the left side. The left tube and ovary were at once removed. The uterus was gradually dissected free as far as its vaginal attachment, and both ureters were carefully dissected out.

The vagina was cut across all the way around, after which adhesions to the rectum were got at from the under side. It was possible to remove the growth without going into the lumen of the bowel at all. There was considerable oozing which was readily checked. Two drains were left in the pelvis and brought out through the vagina, one in the lower angle of the incision. The patient made a perfectly satisfactory recovery and was discharged April 21, 1918.

At the time of operation a small bluish black cyst was noted in the vagina directly behind the cervix (Fig. 7). This bluish black appearance clearly indicated that we were dealing with an adenomyoma.

A longitudinal section of the uterus (Fig. 8) shows that the organ is only slightly altered. In the vaginal wall just behind the cervix, however, is an area of thickening and this shows the characteristic areas of hemorrhage invariably associated with an adenomyoma.

Histologic Examination (Gyn. Path. No. 25514).—A section through the posterior vaginal wall at the point where the bluish black cyst was noted shows that the vaginal mucosa is normal. The underlying tissue consists of nonstriped muscle running in all directions. The cyst noted clinically is lined with low cuboidal epithelium. It is partially filled with old blood which presents a granular appearance, and in the blood are exfoliated epithelial cells which are swollen, have become spherical and are filled with yellowish brown pigment. Some of the epithelial cells lining the cyst present precisely the same picture. Projecting into the cyst cavity at one point is a tongue-like mass of normal uterine mucosa. The surface of this is covered with high cylindrical epithelium. Beneath it is the characteristic stroma of the mucosa, and embedded in this stroma is a uterine gland which is continuous far into the depth of the myomatous tissue. Scattered at various points throughout the diffuse myoma are islands of typical uterine mucosa (Fig. 9), some presenting the usual appearance, others showing old hemorrhage. The stroma cells of the mucosa in such areas are swollen and have taken up yellowish brown pigment.

The mucosa lining the cervix and cavity of the uterus is normal.

In this case, the adenomyoma is lower down than usual and appears to have begun in the posterior vaginal wall rather than in the posterior part of the cervix.

CASE 3 (Septum Case 11).—*Adenomyoma of the rectovaginal septum* (Figs. 10 and 11).

History (Gyn. No. 24601).—Mrs. C. S. F. L., aged 41, came to see me on Jan. 6, 1919. She looked perfectly well but complained of pain in the lower part of the abdomen when she walked, and of excruciating pain in the midline above the symphysis at the time of the periods. She was also suffering a great deal of discomfort when the bowels moved.

The patient began to menstruate at 12, and was perfectly regular. The flow for the last three years had been very free, the periods persisting for six days. There was a great deal of abdominal pain on the third day. The last period was three weeks before her admission. She said she had a yellowish discharge between periods which at times was most irritating. The patient had had four children; no instruments were used in the deliveries.

Examination.—I found the abdomen to be perfectly uniform. There was a small hernia at the umbilicus 3 mm. in diameter. The outlet was moderately relaxed, the cervix was forward and slightly lacerated, and a little nodular thickening about 1.5 cm. in diameter could be felt distinctly, directly behind

the cervix. The body of the uterus was not enlarged, but was sagging backward. Rectal examination revealed the thickening posterior to the cervix very clearly.

Operation and Result.—The patient was admitted to the Johns Hopkins Hospital, Jan. 19, 1919, and operated on the following day. After tying off the round ligaments and opening up the broad ligaments, we tied the uterine vessels and isolated both ureters. We found a little puckering and thickening just posterior and a little to the right of the cervix near the right uterosacral ligament. We cut both uterosacral ligaments, turned down the bladder peritoneum, controlled the vaginal veins and then cut the vagina across all the way around. This enabled us to lift the uterus and rectum well up so that the nodule posterior to the cervix could be attacked from the under side. The growth was gradually loosened and separated from the rectum completely. We were able to accomplish this with the minimal amount of bleeding. The growth in the rectovaginal septum was about 1.5 cm. in diameter, and where the cervix had become adherent to the rectum, the puckered area had developed. As we lifted the cervix away from the rectum, there was an escape of a little old blood. The patient stood the operation perfectly. We removed the appendix and put two drains into the pelvis, bringing them out through the vagina. The patient made an excellent recovery and was discharged, Feb. 13, 1919.

On Saturday morning, June 29, 1919, five months after operation, the patient was taken with intense discomfort, not exactly pain, in the epigastrium. This was not very severe and in spite of it she went to Annapolis. On her return, there was no improvement, but she had a fair night with the aid of an opiate. On Sunday morning, Dr. Frank R. Smith was called but could discover no alarming symptoms. There was no abdominal pain, and no pain on palpation of the abdomen. Magnesium citrate and bismuth were prescribed and the bowels moved well. There was no blood passed in the stools. The patient vomited, but there was no unusual odor to the vomitus. Sunday evening, a hypodermic was given, and the patient rested until 2 o'clock Monday morning. On awakening, she complained of a more generalized pain and of a distress that was rhythmic in character. A little liquid nourishment was given, but this was immediately vomited. About half past six, an enema was given, and the water returned clear and free from blood. Suddenly the patient fell over, gasped a few times and died. The husband, who was a physician, noted the rapid heart beat and abnormal coldness of the arms some time before death. There was no clamminess or dyspnea noted at this time.

Necropsy Findings (J. H. H. Necropsy No. 5933).—This was performed by Dr. R. G. Mills. When the abdomen was opened the omentum was found firmly adherent to the under surface of the scar. At no point were there adhesions between the omentum and loops of intestine. As the intestines came into view, they appeared somewhat distended, a little dark in color. The lowermost loop was very dark and purplish, and the serosa of this dark colored loop had to some extent lost its luster, and the subcutaneous tissue appeared infiltrated with blood. There was a small amount of free, clear straw-colored fluid in the peritoneal cavity, and there were a number of small adhesions that connected the various loops of intestine. It was rather difficult to unravel the abdominal picture.

Dr. Mills' summing up is as follows: "Beginning at the point where the jejunum joins the ileum the bowel passes beneath the mass of adherent intestine, it passes under a fold of mesentery, it emerges below in the region of the cecum and is there united with another loop of bowel by a long, slender

strong band of adhesions. The ileum now passes into a long loop that circles around and is adherent once more to the long adhesion just mentioned. Just above this attachment the ileum is kinked into an S-shaped mass as the result of adhesions which attach contiguous mesenteric surfaces. The bowel then passes on in another loop returning beneath this long slender adhesion. At this point the lumen of the ileum is abruptly decreased in caliber and beyond this point is much smaller. At the point of constriction, the serosa is very deeply injected and somewhat consolidated. The bowel is much firmer by reason of a hemorrhage at the point where obstruction occurs.

"Subsequent to operation, it is probable that adhesions formed between contiguous loops of bowel. These have organized, producing distortion of the lumen of the bowel. The adhesions are probably responsible for the long slender adhesion above mentioned. Probably at the onset of the present acute attack a twist of the whole mass has occurred producing in effect a volvulus. This has thrown unusual tension on the narrow band which, producing a bridge-like form, has allowed a loop of ileum to pass beneath it."

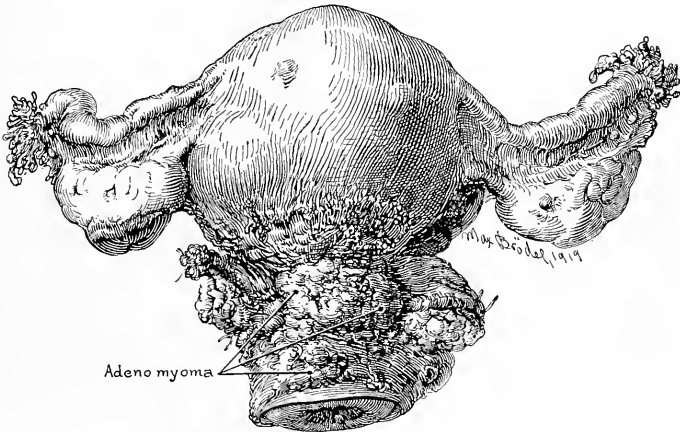


Fig. 10 (Case 3).—Adenomyoma of the rectovaginal septum. Springing from the posterior surface of the uterus are a few small myomas. Growing from the posterior surface of the cervix just below the peritoneal attachment is a rough nodular growth. This on histologic examination showed typical adenomyoma (Fig. 11). As a rule, I never remove normal ovaries, but in some cases of adenomyoma of the rectovaginal septum it is necessary to leave a small portion of the growth attached to the rectum, and if the ovaries are saved there appears to be a tendency for the remaining portion of the adenomyoma to continue to grow.

Dr. Mills' findings disclose clearly the fact that intestinal adhesions had followed the abdominal operation and that several months later there was a sudden volvulus of the adherent intestinal mass producing acute obstruction. It is remarkable to find a patient succumbing so quickly after the symptoms of partial obstruction developed. It will be noted, however, that the upper part of the small bowel was much involved. In such cases alarming symptoms usually develop relatively early.

Examination of Specimen (Gyn. Path. No. 24657).—The specimen consists of the uterus with the appendages intact (Fig. 10). The uterus is 9 cm. long, 5 cm. broad and 5 cm. in its anteroposterior diameters. Both the anterior and posterior surfaces are smooth. In the posterior wall of the uterus are two small fibroids. These project a little from the surface. Springing from the

posterior wall of the cervix is a small, irregular growth about 1.5 by 1 cm. This is intimately blended with the cervical wall. In the depth, it contains several small bluish black areas.

There is a slight rolling out of the cervical mucosa. Situated in the anterior wall of the uterus is a myoma, 1.5 cm. in diameter. The uterine mucosa is normal.

The appendages on both sides are perfectly normal.

Histologic Examination.—The mucosa of the vaginal and cervical portions of the cervix is normal. The growth on the posterior surface of the cervix consists in large measure of fibrous tissue. It also contains a moderate amount of nonstriped muscle. Here and there in this diffuse growth are irregular deposits of uterine mucosa (Fig. 11). This in some places presents the normal picture, at other points it shows a mild grade of hypertrophy. Here and there the stroma of the mucosa shows hemorrhage.

We are dealing with a typical adenomyoma of the rectovaginal septum.

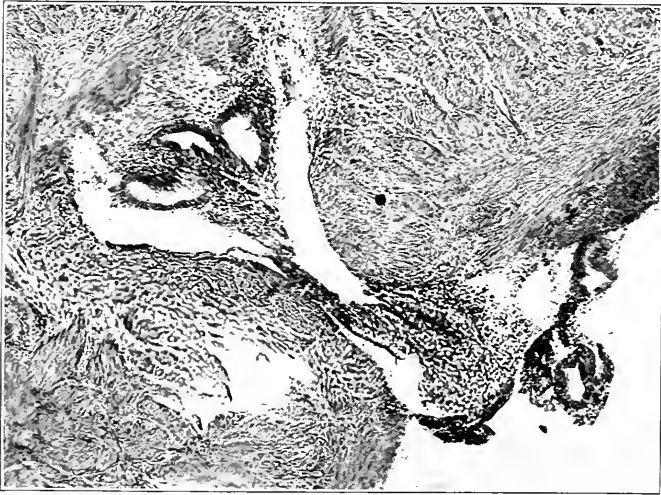


Fig. 11 (Case 3).—Adenomyoma of the rectovaginal septum. For the gross specimen see Figure 10. The tissue was very difficult to cut, hence the imperfect section. The glands of the growth are surrounded by the characteristic stroma.

CASE 4 (Septum Case 12).—*Adenomyoma of the rectovaginal septum* (Figs. 12 and 13).

History (Gyn. No. 24585).—B. L., aged 25, admitted to the Johns Hopkins Hospital, Jan. 21, 1919, had had a dilatation and curettement at the Church Home and Infirmary following a miscarriage in June, 1910. On Oct. 28, 1911, she was admitted to the Johns Hopkins Hospital, and a diagnosis of chronic pelvic inflammation was made. I performed a dilatation and curettement, removed the right tube, the left tube and ovary and appendix. Laboratory examination (Gyn. Path. No. 16635) revealed acute endometritis, and (Gyn. Path. No. 16625) a double pyosalpinx, a relatively normal appendix, a cystic left ovary. There was nothing in the clinical history at that time to indicate adenomyoma.

The patient began to menstruate at 13, and was regular. Since the operation in 1911, the periods had occurred at intervals of from fifteen to twenty-one days and had lasted from six to seven days. She formerly had little menstrual pain, but for the last year the discomfort had been growing worse. The pain usually started when the period commenced, it might last for a couple of days. It was dragging, dull-aching in character, and she also had pain in the back. Her last menstrual period occurred after her admission to the hospital. There had been no intermenstrual bleeding except on one occasion, a year before, after severe exertion. There was a slight leukorrhœa just before and after the period. The patient had been married two years and

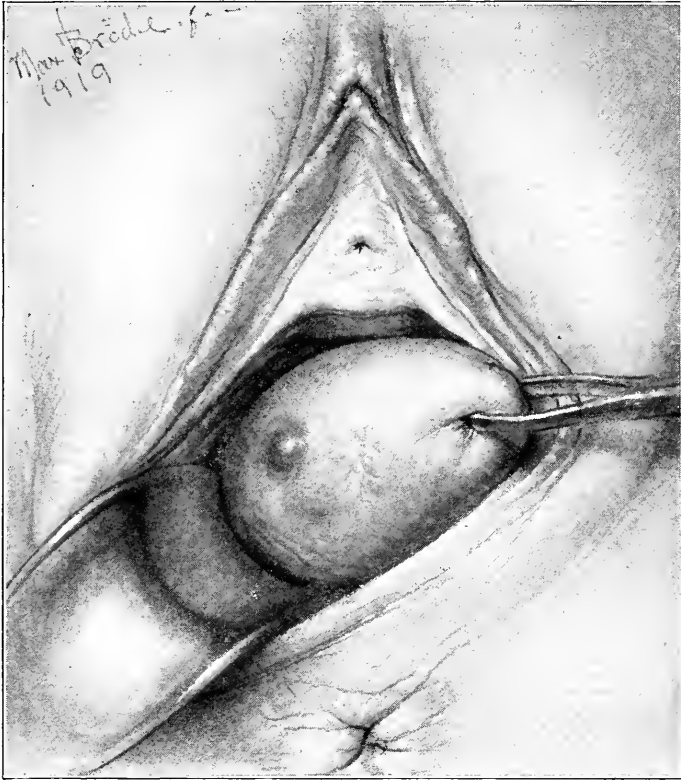


Fig. 12 (Case 4).—Adenomyoma low down in the rectovaginal septum. The cervix has been drawn strongly to the left. On the posterior surface high up are two small cysts. One stands out prominently, the other is rather hazy. Just below them, that is, toward the external os, the mucosa is definitely puckered. The low position of the growth enabled us to remove it with ease through the vagina. For the histologic picture see Figure 13.

a half. She had had no children, but she had had a miscarriage at six weeks in 1910. In 1913, a small lump was felt in the vaginal wall behind the cervix. At that time it was no larger than a pinhead. It had gradually increased in size and she now had two small nodules. These were not tender.

Examination.—On vaginal examination, the cervix was found to be normal in size. The body of the uterus was anteposed, and in good position. There was no thickening on either side. In the vaginal vault, slightly to the right

of the cervix, were two elastic spherical bodies each about 5 mm. in diameter. They lay close together and seemed really to form part of the same nodule. They were not fixed and occasioned no discomfort. When a speculum was introduced to the side of the cervix, one saw two small bluish cysts with slight puckering of the vaginal mucosa about the center of each of these small thickenings (Fig. 12).

Operation.—Jan. 25, 1919, I drew the cervix well over to the left, and on the right side of the vaginal vault lateral to the cervix there appeared two small areas darkish blue in color. These were incorporated in two small tumors

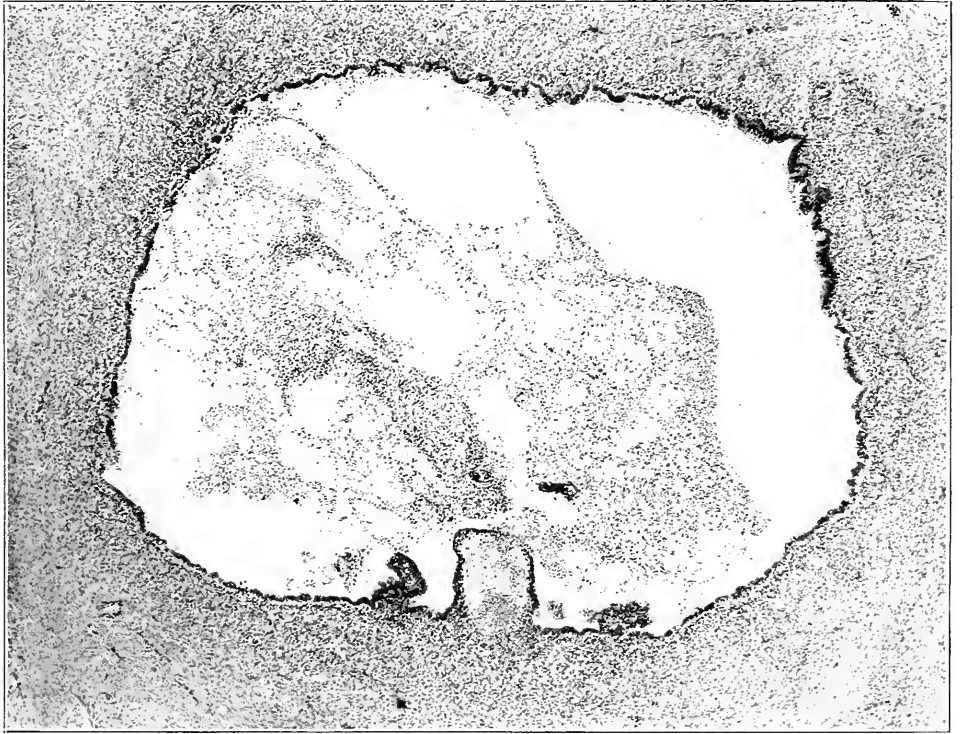


Fig. 13 (Case 4).—A small cyst in an adenomyoma of the rectovaginal septum. This is one of the small cysts noted in Figure 12. It is lined with one layer of cylindric epithelium of the body type, and extending into the cavity are several small projections. The cyst contained blood and some exfoliated epithelium. At some points, the cyst epithelium lay directly on the underlying muscle, in other places it was separated from the muscle by a definite stroma.

lying deep beneath the vaginal mucous membrane. I made an elliptical incision including these two small tumors. They were removed without any difficulty and the vaginal incision closed. The patient was discharged, February 5, in good condition.

Examination of Specimen (Gyn. Path. No. 24652).—The larger cyst reaches a diameter of 6 by 4 mm. Both cysts are surrounded by a definite layer of muscle arranged circularly. The cysts are lined by one layer of cylindric epithelium which is somewhat folded. In one of the cysts are definite projections (Fig. 13). Both cysts contained blood and in the underlying stroma and muscle are quantities of yellowish brown pigment.

This was undoubtedly another adenomyoma. It was situated much lower down than usual and we were accordingly able to remove it with the minimal amount of difficulty.

CASE 5 (Septum Case 13).—*Adenomyoma of the rectovaginal septum* (Figs. 14 and 15).

History (Gyn. No. 24864).—A. A., aged 26, was admitted to the Johns Hopkins Hospital, May 2, 1919, complaining of bearing down pains in the pelvis and of backache. The patient's mother died of some form of cancer. Menstruation began at 13, was regular and lasted from three to four days. She had pain for the first day, cramplike in character. There was no intermenstrual bleeding. The patient has been married seven years. She has had

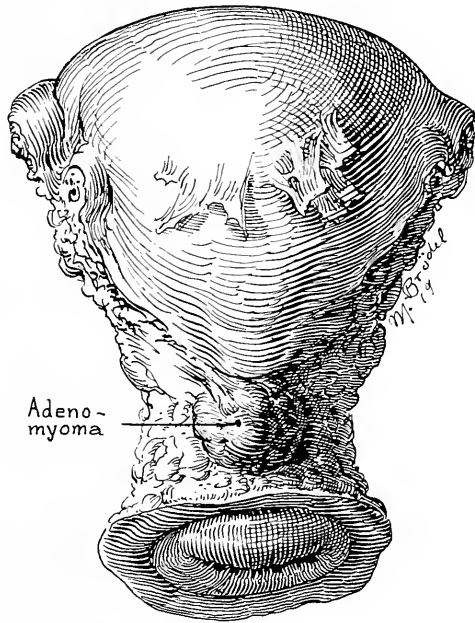


Fig. 14 (Case 5).—Adenomyoma of the rectovaginal septum. Attached to the posterior surface of the uterus are a few adhesions. Springing from the posterior surface of the cervix below the peritoneal attachment is a well defined nodule, 2 by 1 cm. For the histologic picture of this nodule see Figure 15.

one child. About a year ago she began to have a dragging sensation in the lower abdomen; this was no worse at the periods. The symptoms had increased in severity.

Examination.—The patient was a well developed woman. The outlet was relaxed, the cervix was lacerated. Behind the cervix was a nodule about 1.5 cm. in diameter. This was not very tender. The uterus itself was normal in size and in good position. On the left side there was some thickening probably due to a prolapsed ovary. The patient had no hemorrhoids.

Dr. H. N. Shaw, the resident gynecologist, immediately thought of adenomyoma of the rectovaginal septum.

Operation.—May 3, under anesthesia, I confirmed Dr. Shaw's impressions. On examination, I found that the rectum was attached to the nodule posterior

to the cervix. The rectal wall did not seem to be invaded but was somewhat puckered at this point.

When the abdomen was opened, a little puckered area could be seen just posterior to the cervix. The rectum here was lifted up and had become adherent to the puckered area. The picture was that of a typical early adenomyoma of the rectovaginal septum. The operation was begun by tying and cutting the round ligaments on each side. The right ovarian vessels were clamped and cut. We decided to leave the left ovary. After freeing the broad ligaments on each side, they were spread widely apart and the inner flap was split down to the region of the ureter. Both ureters were now dissected out and the



Fig. 15 (Case 5).—Adenomyoma of the rectovaginal septum. This section is from the adenomyoma springing from the posterior part of the cervix in Figure 14. The muscular tissue is very dense. Scattered throughout it are isolated glands surrounded by the characteristic stroma.

uterine vessels ligated. The dissection was now carried down far in the vaginal vault, and the vaginal veins were clamped and tied. After sufficient exposure had been obtained in this manner, the uterosacral ligaments were cut and the uterus drawn well out. The vagina was then cut across well below the nodule in the rectovaginal septum and the thickened vaginal wall was gradually dissected free from the rectum. The bowel was in no way damaged. The appendix was removed, a small drain was left in the pelvis and brought out through the vagina, and the abdominal incision closed. The patient left the table in excellent condition. She was discharged, May 25, 1919.

Examination of Specimen (Gyn. Path. No. 24989).—The specimen consists of the uterus, right tube and ovary and appendix. The uterus is 8 cm. long, 6 cm. broad and 4.5 cm. in its anteroposterior diameters. The anterior surface of the uterus is smooth, the posterior surface is covered by a few shaggy adhesions, but is for the most part smooth. Projecting from the posterior surface of the cervix near the internal os is a nodule 2 by 1 cm. (Fig. 14). This is irregular. It blends into the cervical tissue, but the line of demarcation is sharply defined. Its superficial portion invades the surrounding adipose tissue. It contains a few minute brownish areas. The vaginal portion of the cervix shows some laceration. The uterine mucosa reaches 6 mm. in thickness.

The right tube is normal. The right ovary contains an unruptured corpus luteum, and the peritoneum over this area has been adherent.

Histologic Examination.—The mucosa of the vaginal portion of the cervix is normal. The cervical glands present the usual appearance. The nodule projecting from the posterior surface of the cervix consists of nonstriped muscle and fibrous tissue. Scattered throughout it are small irregular islands of uterine mucosa (Fig. 15). Near the point where the growth was attached to the rectum is a rather large area of mucous membrane showing the characteristic gland hypertrophy now and then noted in the mucosa of the body of the uterus.

This is a typical case of adenomyoma of the rectovaginal septum.

CASE 6 (Septum Case 14).—*Extensive adenomyoma of the rectovaginal septum; extension to the surface of the right fallopian tube; uterine mucosa on the surface of the right ovary* (Figs. 16, 17, 18, 19, 20 and 21).

History (Gyn. No. 24887).—L. G., aged 40, white, was admitted to the Johns Hopkins Hospital, May 9, 1919, complaining of dysmenorrhea and menorrhagia.

The patient had been in the hospital in 1912 (Gyn. No. 18377). At that time I performed a partial resection of both ovaries, released pelvic adhesions and removed the appendix.

She was again admitted to the hospital in 1915 (Gyn. No. 20850). At that time Dr. Neill, the resident, incised and cauterized a Bartholin's gland abscess.

The patient's menses were fairly regular and lasted seven days. There was a very profuse flow. The last period was April 20. There was no intermenstrual bleeding. The patient had always had very severe dysmenorrhea. This had become more distressing during the last year. The most acute pain was experienced a day before the period started. During the twenty-four hours before the onset of the flow the patient was nauseated, vomited, had extreme abdominal pain and pain in the back. These symptoms were getting worse.

The patient had been married fifteen years. She had one child, fourteen years ago, and no miscarriages.

Examination.—The patient was a rather delicate, undernourished, middle-aged woman. Her hemoglobin was 75 per cent., white blood cells, 11,000. The lower abdomen was prominent, due to a hard mass extending up from the pelvis and reaching to within about 4 cm. of the umbilicus. The outlet was moderately relaxed and the cervix was high up in the vaginal vault. It was continuous with the abdominal tumor.

Operation.—May 12, 1919, on examination under ether, the pelvis was found to contain a large mass about the size of a five-months' pregnancy. On the surface of this and also posteriorly, a hard nodule could be felt. In the rectovaginal septum on the left side was a dense indurated mass.

When the abdomen was opened, the uterus was found to be quite symmetrical and enlarged from the fundus to the cervix. The right tube was filled with fluid and was adherent to the uterus. The intestines were adherent to the posterior surface of the uterus. The culdesac was indurated, and the rectum was adherent well up on the posterior surface of the uterus. It was also firmly attached to the left broad ligament. The left tube was partly obscured by adhesions, and the left ovary was buried in adhesions. As a

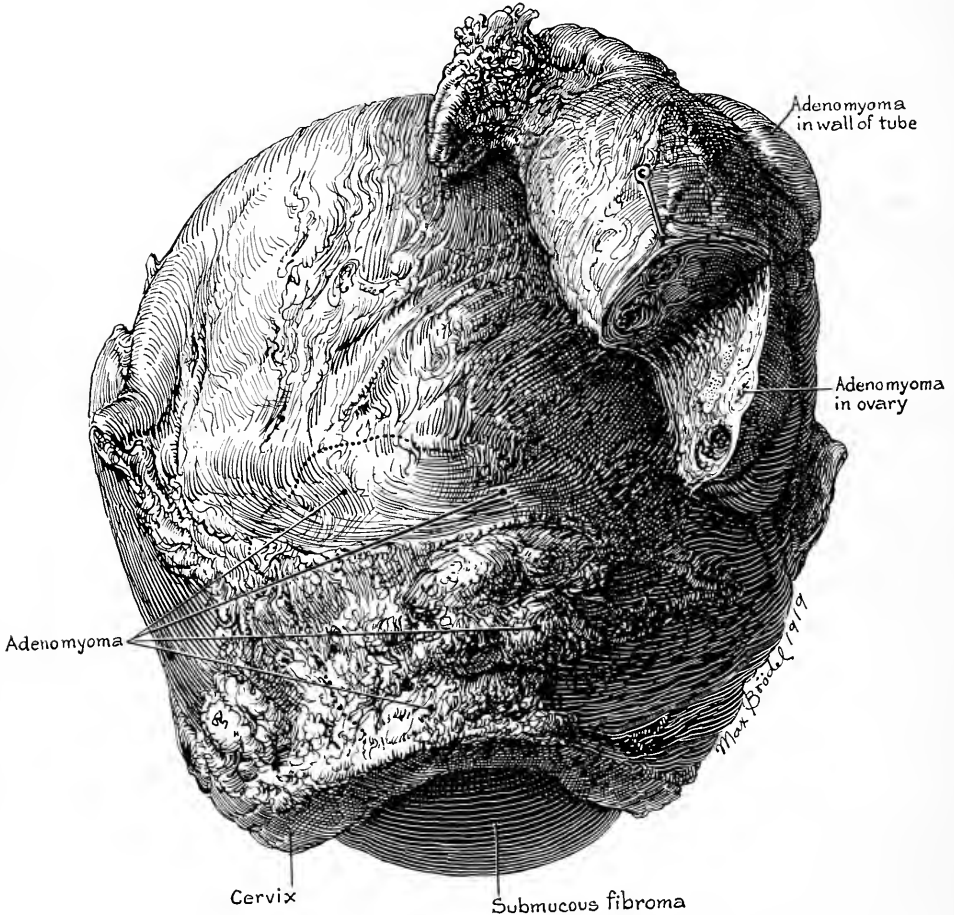


Fig. 16 (Case 6).—Widespread adenomyoma of the rectovaginal septum; extension to the surface of the right ovary and tube. The supravaginally amputated uterus was 13 cm. long and 11 cm. broad. Its anterior surface was smooth, its posterior surface covered by adhesions. Occupying the posterior surface of the cervix and extending well up on the body of the uterus was a diffuse and hard growth. This consisted of typical adenomyoma (Figs. 17, 18 and 19). The right tube and ovary formed one large solid mass, and on the surface of both tube and ovary was typical uterine mucosa (Figs. 20 and 21). This is the most widespread distribution of an adenomyoma of the rectovaginal septum that I have ever seen.

matter of fact, the left tube and ovary and the sigmoid flexure formed one solid mass.

The operation was begun by separating some loops of bowel from the pelvis, then the left round ligament was cut; the left tube and ovary were clamped off at the uterus and left temporarily in place. The bladder was pushed down

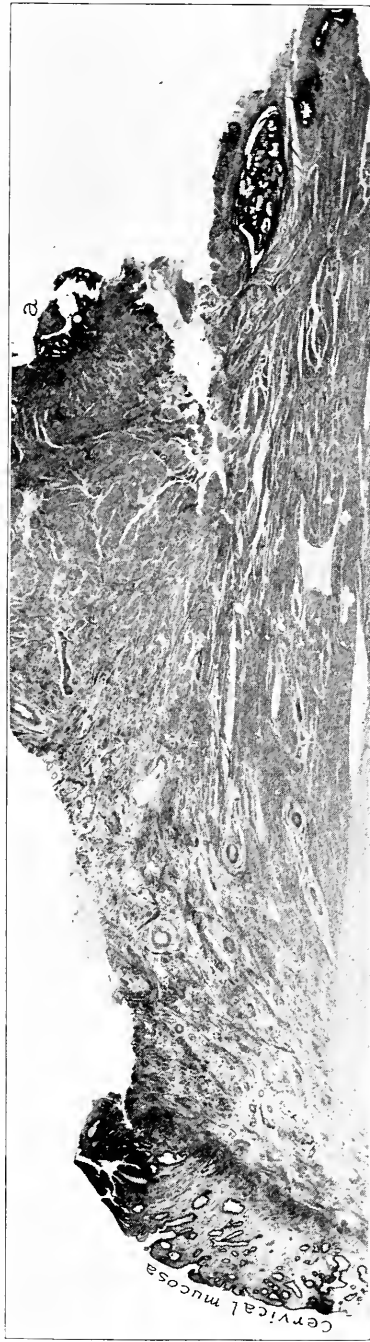


Fig. 17 (Case 6).—Adenomyoma of the rectovaginal septum. This section is from the cervix of the uterus seen in Figure 16. To the left is normal cervical mucosa, to the right we see islands of uterine mucosa from the rectovaginal septum. The area *a* has been magnified and is shown in Figure 18.

and the right round ligament was cut, the right ovarian vessels were then clamped and cut. After this procedure, it was found possible to lift the uterus well up, and we then realized that without doubt we were also dealing with an adenomyoma of the rectovaginal septum. Dissection was gradually carried down on the posterior surface of the cervix as far as possible, and a supra-vaginal amputation performed. Better exposure could now be obtained, and the stump of the cervix was dissected free. The rectum was densely adherent to the hard mass occupying the lower and posterior part of the uterus, the posterior part of the cervix and the adjacent rectovaginal septum. During manipulation a little dark blood escaped from the rectovaginal septum. To



Fig. 18 (Case 6).—This picture is an enlargement of the area *a* in Figure 17. One sees numerous uterine glands surrounded by the typical stroma of the mucosa. A few of the glands are dilated. In the upper part of the picture is an area of characteristic stroma covered over by one layer of cylindrical epithelium.

have removed entirely the diffuse growth of the rectovaginal septum would have been an impossibility. As it was, it was one of the most difficult hysterectomies I ever attempted. The ureters were not exposed on either side, but they could be seen through the pelvic peritoneum; they were well removed from the point where the uterine vessels were controlled.

The cut edge of the vaginal mucosa was then controlled all the way round, and then the broad ligaments were obliterated as far as possible. Notwithstanding our attempts to leave a smooth surface, a small amount of raw area still remained in the culdesac. Two cigaret drains were placed in the pelvis

and brought out through the vagina. The abdomen was then closed in the usual manner. The patient lost a considerable amount of blood during the operation but left the table in good condition.

She was discharged, June 1, 1919. There was no induration in the pelvis and she felt well.

We shall watch the subsequent history in this case with a good deal of interest as some of the adenomyomatous growth was of necessity left adherent to the rectum.

Examination of Specimen (Gyn. Path. No. 25003).—The specimen consists of the enlarged uterus with its detached cervix and of the appendages from both sides

The supravaginally amputated uterus is 13 cm. long and 11 cm. in its anteroposterior diameters. The anterior surface of the uterus is smooth, the posterior surface at the fundus is covered by shaggy adhesions. The greater



Fig. 19 (Case 6).—Adenomyoma of the rectovaginal septum. This is a section from the adenomyoma of the rectovaginal septum shown in Figure 16. The uterine mucosa is unusually abundant, forming fully half of the section. Even with the very low power it will be noted that many of the glands show hypertrophy.

part of the posterior surface over an area approximately 7 cm. from above downward and 12 cm. from side to side presents a rough and ragged appearance. This is the area that will prove to be of the greatest interest, the appearance being due to a widespread adenomyoma occupying the posterior surface of the uterus and cervix (Fig. 16).

The increase in size of the uterus is in large measure due to the presence of a submucous myoma 10 cm. in length. This projects into the uterine cavity from the posterior wall. The anterior wall of the uterus varies from 1.5 to 2 cm. in thickness, and the mucosa from 1 to 7 mm. The mucous membrane over the surface of the submucous myoma is very thin, in most places being not over 0.5 mm. thick.

The widespread raw area which occupies the greater part of the posterior surface of the uterus has a very ragged appearance. As noted from the description of the operation, this area had literally to be cut away from the rectum. On incising the raw area, one notes a coarse striation of the tissue, and at various points are small brownish specks. Histologic examination will show that this is adenomyomatous tissue.

The lower portion of the cervix was removed after the fundus had been taken away. The vaginal portion of the cervix shows some eversion of the cervical mucosa.

Right Side: The tube and ovary form a conglomerate mass which has been densely adherent to the side of the uterus as well as to the surrounding structures. Notwithstanding this the fimbriated end of the tube is patent and

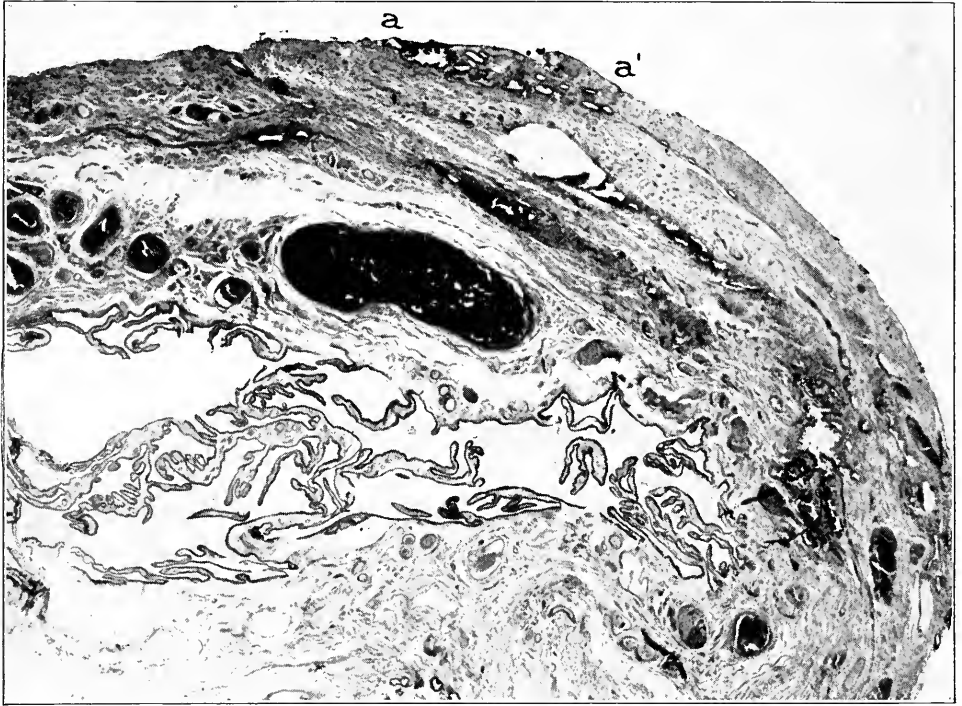


Fig. 20 (Case 6).—Extension of an adenomyoma of the rectovaginal septum to the surface of the adherent fallopian tube. The gross appearance of the tube is shown in Figure 16. The folds of the tube look relatively normal. The solid black areas are blood vessels. On the surface of the tube at *a-a'* is an area of typical uterine mucosa. It really looks as if the widespread adenomyoma of the rectovaginal septum has literally flowed over on the surface of the tube.

appears relatively normal. The tubo-ovarian mass measures 10 cm. in length and at one point reaches a diameter of 5 cm. It is impossible to trace the continuity of the tube in its middle portion where it is intimately attached to the ovary and is covered by adhesions. The ovary contains at least two small corpora lutea cysts.

Left Side: The appendages form an inseparable mass, 6 cm. long and about 4 cm. in diameter. They are embedded in adhesions, but the fimbriated end of the tube is patent.



Fig. 21 (Case 6).—Uterine mucosa on the surface of the ovary in a case of adenomyoma of the rectovaginal septum. For the gross appearance of the ovary see Figure 16. The miniature uterine cavity on the surface of the right ovary is represented by *a*. The lining mucosa resembles in every particular that of the body of the uterus. Some of the glands show hypertrophy. The mucosa of the adenomyoma of the rectovaginal septum seems to have overflowed to the surface of the adherent ovary. The same condition was noted on the surface of the corresponding tube (Fig. 20).

Histologic Examination.—Sections from the cervical mucosa show that it is normal (Fig. 17). Sections from various portions of the large raw area on the posterior surface of the body of the uterus and cervix present an amazing picture (Figs. 17, 18 and 19). The tissue consists in large measure of nonstriped muscle, and scattered everywhere throughout this are tremendous areas of perfectly normal looking uterine mucosa. So abundant is the mucosa in many places that it forms at least one half or two thirds of the section. This mucous membrane in many places shows a tendency toward hypertrophy (Fig. 19). Its stroma shows a considerable amount of hemorrhage, and here and there a gland is dilated reaching a millimeter or more in diameter. This is the most widespread distribution of an adenomyoma on the posterior surface of the uterus that I have ever seen.

The myoma occupying the posterior wall of the uterus and projecting into the uterine cavity shows much hyaline degeneration.

Sections from the right uterine cornu show that the tube at this point is perfectly normal, but sections further out, although showing a normal mucosa, reveal typical areas of uterine mucosa on the surface of the tube (Fig. 20). One gathers the impression that the uterine mucosa from the diffuse adenomyoma on the posterior surface of the cervix and uterus has overflowed upon the adherent tube.

On the surface of and intimately attached to the right ovary is a miniature uterine cavity (Fig. 21): The glands of its mucosa show a moderate hypertrophy. Other sections from the same ovary show a diffuse adenomyoma intimately blended with the ovarian tissue, so intimately attached that no line of demarcation can be detected. It must be remembered, however, that this ovary was firmly glued to and continuous with the diffuse adenomyoma occupying the posterior surface of the uterus.

CASE 7 (Septum Case 15).—*Adenomyoma of the rectovaginal septum* (Figs. 22 and 23).

History (Gyn. No. 24984).—C. B., aged 36, white, entered the Johns Hopkins Hospital, June 12, 1919, complaining of pain in the left lower abdomen at the menstrual period. She also had severe headaches. The menses began at 13, were regular until six months ago when they appeared three times in a month; the last period was on June 7, the one previous on May 28. During the last two months the pain had been severe in the left lower abdomen. She gave no history of rectal bleeding at the menstrual period.

Examination.—On pelvic examination, the cervix was found low in the vagina. The body of the uterus had dropped back, was irregular and nodular in outline. In the left side of the pelvis was a movable, cystic, rather tense mass about 8 cm. in diameter.

Operation.—On examination under anesthesia in addition to the above findings, a small cystic mass could be felt on the right. June 14, the abdomen was opened and two cysts with rather opaque looking walls were seen in the pelvis. One lay up in under the left broad ligament, the other occupied the floor of the culdesac; both contained dark chocolate-colored fluid, in other words, there was a corpus luteum cyst on each side. The cysts were resected and a small piece of ovary was left on both sides. After removal of the cyst, there still remained a small adherent mass between the cervix and rectum, and there was no doubt that an adenomyoma of the rectovaginal septum existed. The ureters were isolated, the uterus freed on all sides and the vagina cut across. A small amount of adenomyomatous tissue was left adherent to the rectum. Near the completion of the operation, it was found that the left tube

and ovary had a very poor blood supply, and for this reason they were removed. The appendix, which was very long, was also removed. A drain was laid in the pelvis and brought out through the vagina. The abdomen was then closed. A considerable amount of blood was lost during the operation. The patient left the table in fair condition. She was discharged, July 5, 1919, in good condition.

Examination of Specimen (Gyn. Path. No. 25120).—The specimen consists of the uterus and of the much mutilated appendages together with the appendix.

The uterus is 11 cm. long, 6 cm. broad and 4 cm. in its anteroposterior diameters (Fig. 22). The anterior surface is smooth. The posterior surface almost to the top of the fundus is covered by adhesions. Springing from the posterior surface of the cervix is a raised hard area 2.5 by 2 cm. The tissue here is exceptionally hard, and on section it presents a brownish black appearance. It extends into the posterior cervical wall nearly 1 cm. and spreads

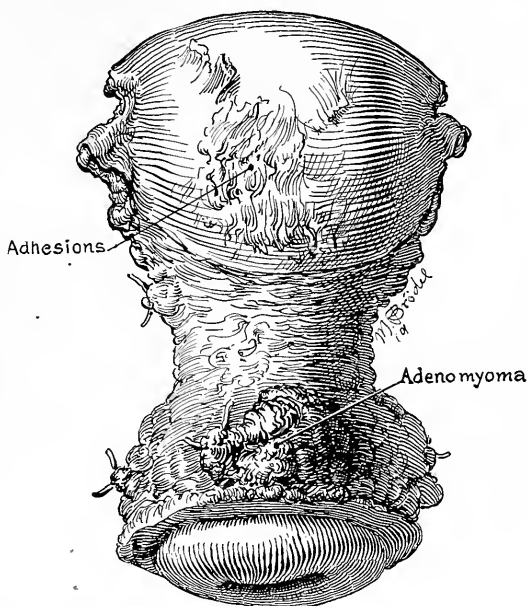


Fig. 22 (Case 7).—Adenomyoma of the rectovaginal septum. The posterior surface of the fundus is partially covered by adhesions. Springing from the posterior part of the cervix near the vaginal attachment is a well defined adenomyoma 2.5 by 2 cm. For the histologic picture, see Figure 23.

out like the broad roots of a tree. It also encroaches slightly on the posterior vaginal wall. The mucosa of the vaginal portion of the cervix is somewhat everted. The mucous membrane lining the cervical canal and the cavity of the uterus presents the usual appearance.

On account of mutilation it is impossible to tell which are the right and which the left appendages. One ovary has been converted into a thin-walled cyst, 7 cm. in diameter. The inner surface of this presents a dirty chocolate-colored appearance. It is a corpus luteum cyst. A portion of the other ovary is covered by dense adhesions. It contains a corpus luteum cyst, 4 cm. in diameter. Accompanying the specimen is one fallopian tube which is perfectly normal. As noted from the history, one tube and part of one ovary were left

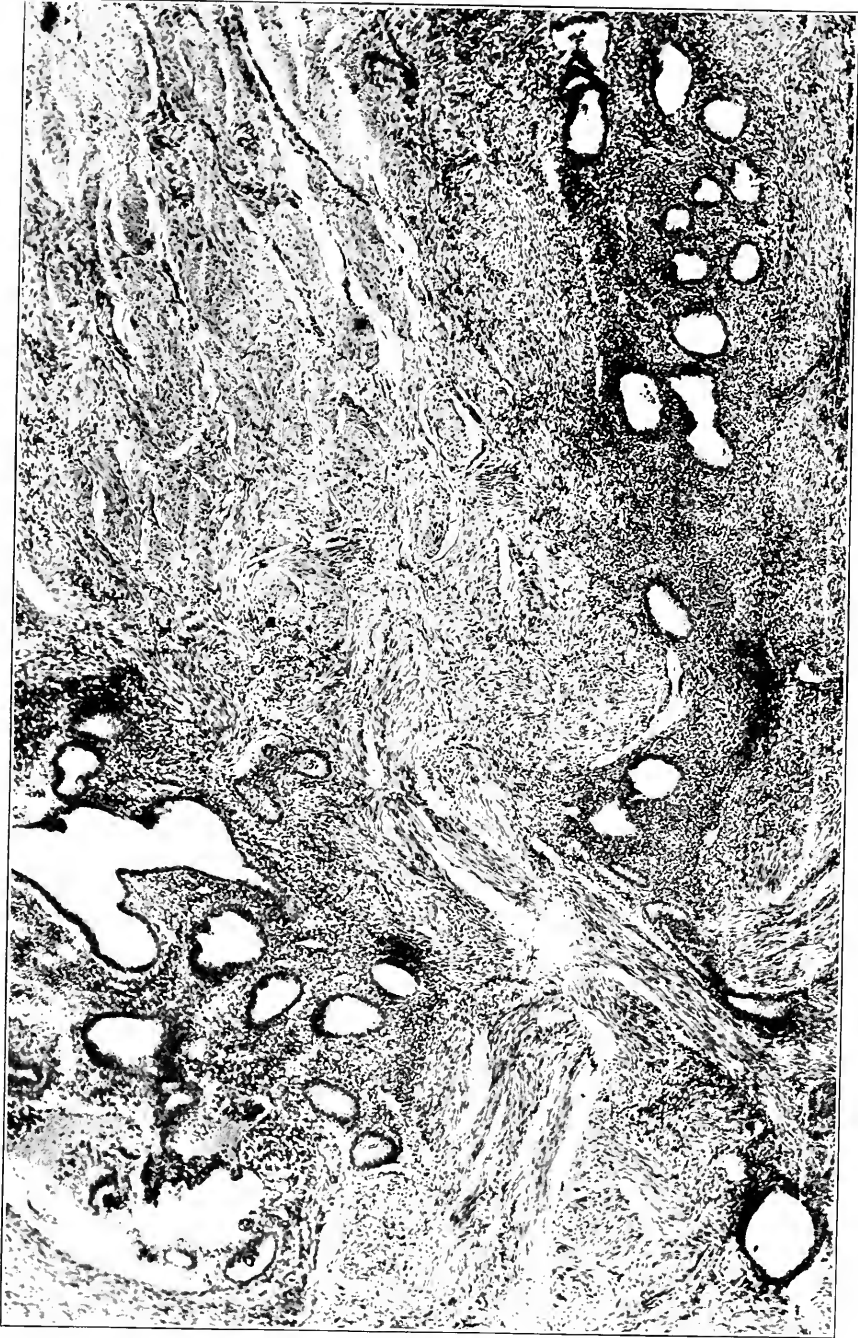


Fig. 23 (Case 7).—Adenomyoma of the rectovaginal septum. For the gross specimen, see Figure 22. The matrix of the growth is made up of nonstriated muscle and fibrous tissue. Occupying fully one third of the field are areas of typical uterine mucosa. Some of the glands are dilated. Here and there a gland lies in direct contact with the muscle.

in place. We had in this case corpora lutea cysts on both sides, and these were covered by adhesions while both tubes were normal.

The appendix is very hard, 9 mm. in diameter. The lumen of the appendix is not over 1 mm. in diameter.

Histologic Examination.—The cervical glands present the usual appearance. The mucosa lining the body of the uterus shows some small round cell infiltration in the superficial layers. The growth on the posterior surface of the cervix consists of nonstriped muscle and fibrous tissue. Scattered throughout it are large and small islands of uterine mucosa (Fig. 23). The stroma of this mucosa shows a considerable amount of hemorrhage. Here and there a uterine gland lies in direct contact with the muscle.

The picture is that of a typical adenomyoma of the rectovaginal septum.

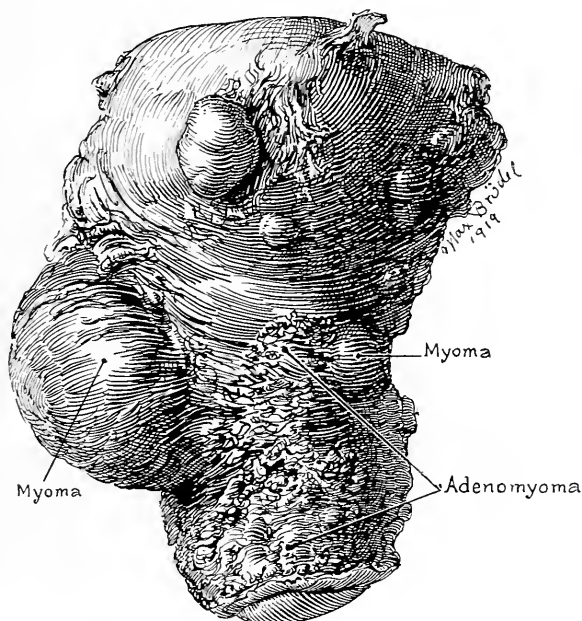


Fig. 24 (Case 8).—Multiple uterine myomas; adenomyoma of the rectovaginal septum. The specimen is viewed from behind. Scattered over the posterior surface of the uterus are several small myomas, and projecting into the left broad ligament is a myoma 3.5 by 2.5 cm. Occupying the posterior part of the cervix is a rather extensive adenomyoma. This was densely adherent to the rectum which had been drawn up. For the histologic appearance of the adenomyoma, see Figure 25.

CASE 8 (Septum Case 16).—*Adenomyoma of the rectovaginal septum; small multiple uterine myomas* (Figs. 24 and 25).

History (C. H. I. No. 22465).—C. W., aged 36, was referred to me by Dr. Carlton M. Cook, Oct. 9, 1919.

She began to menstruate at 14, was regular; the flow was free and lasted from six to seven days. It was formerly painful for the first two days but now the pain persisted throughout the entire period and the patient had to remain in bed. Her last period ended a few days ago. It had persisted for ten days.

Twelve years ago she had an abdominal operation; several fibroids were removed, one ovary and part of the other were also taken away.

The patient has been worse since she had influenza in October, 1918.

Examination.—The patient was admitted to the Church Home and Infirmary October 9, and operated on Nov. 4, 1919. On examining this patient under anesthesia, I felt a nodule, about 1 cm. in diameter, just posterior to the cervix and was instantly reminded of an adenomyoma of the rectovaginal septum. On the left side was an area of thickening, approximately 2 by 3 cm. As there were evidently many adhesions, a definite diagnosis could not be made.

Operation and Result.—I made a median incision and found a few omental adhesions on the anterior abdominal wall. The left tube and ovary had been removed at a previous operation. The right ovary was densely adherent to the pelvic floor and also to an epiploic appendage. We decided that a removal of the uterus was indicated, more particularly as the cervix was adherent to the anterior surface of the rectum. The rectum was also drawn upward. We removed the uterus from left to right, amputating through the cervix and removing the left tube and ovary.



Fig. 25 (Case 8).—Adenomyoma of the rectovaginal septum. For the gross picture, see Figure 24. The muscular growth is very dense, the glands few and far between. In the upper part of the picture is a definite gland lying in direct contact with the muscle, and the surface at *a* is covered by one layer of cylindric epithelium.

After removing the uterus, I took out the cervix and it was necessary literally to cut the posterior vaginal wall and the cervix away from the rectum. There was just the slightest area of thickening on the anterior rectal wall.

After controlling all oozing, we examined the right ureter and found it normal. The left ureter could not have been located without a great deal of dissecting. The appendix was curled on itself and adherent. It was also removed. Two drains were left in the pelvis and brought out through the vagina.

The patient left the hospital in excellent condition on Nov. 24, 1919.

Examination of Specimen (Gyn. Path. No. 25477).—The cervix and body of the uterus when put together give a combined length of 8 cm. (Fig. 24). The uterus is 6 cm. broad and 4 cm. in its anteroposterior diameters. The anterior surface of the uterus is smooth, but nearly the entire posterior surface is covered by adhesions. Projecting from the posterior surface, high up, is a pedunculated bean-shaped myoma, 1.5 cm. long. There are also a few other minute myomas scattered over the surface of the uterus. Attached to the left side of the cervix and extending into the broad ligament is a myoma,

3.5 by 2.5 cm. Projecting from the center of the cervix posteriorly is a small raised area of thickening, about 1 cm. in diameter. This is where the rectum was attached to the cervix. The cavity of the uterus contains a pedunculated submucous myoma, 2 cm. in diameter. The thickening noted on the posterior wall of the cervix is hard and contains a few chocolate-colored areas.

Histologic Examination.—Sections from the cervix show that the mucosa is normal. The growth on the posterior surface of the cervix consists of non-striped muscle and fibrous tissue. In the outlying portions it is interesting to

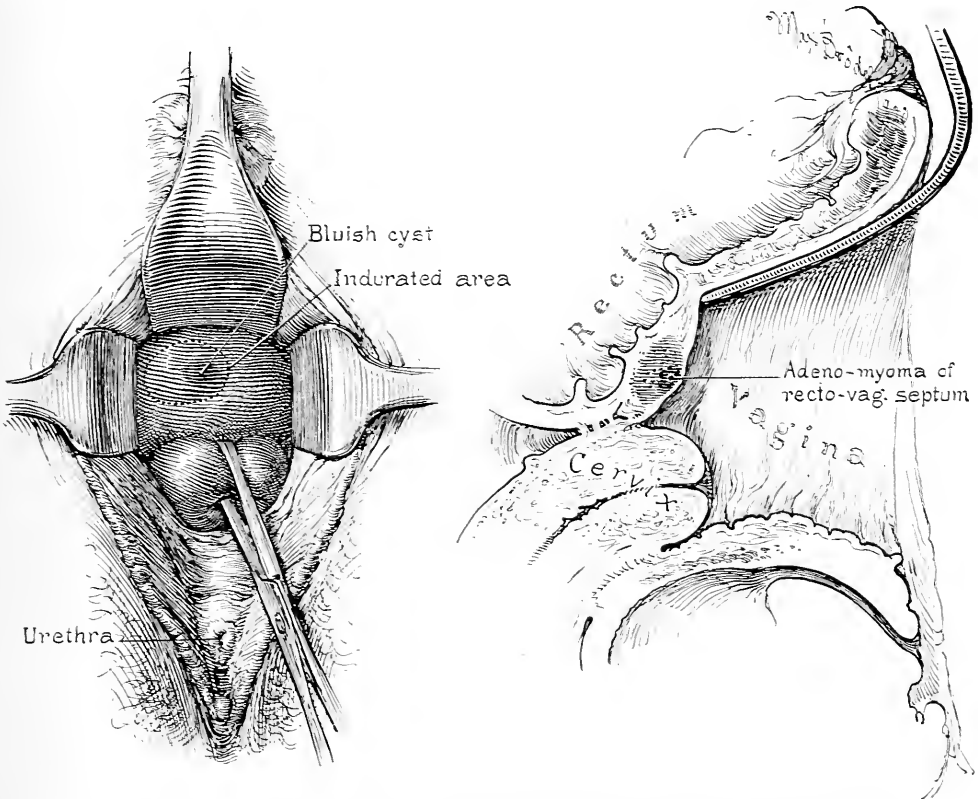


Fig. 26 (Case 9).—Adenomyoma of the rectovaginal septum. The patient is shown in the knee-chest posture. Just behind the cervix and slightly to the left of the median line is a relatively globular nodule about 1.5 cm. in diameter. In this nodule were two bluish black cysts, only one of which could be clearly seen. The relation of the adenomyoma to the cervix and rectum is clearly indicated in the picture to the right. Although no microscopic examination has been possible, still the diagnosis is certain.

see the manner in which the diffuse myomatous growth is gradually replacing the adipose tissue. Here and there in the diffuse growth is a uterine gland usually lying in direct contact with the muscle (Fig. 25). Some of the growth has, as was noted at operation, been left attached to the rectum.

CASE 9 (Septum Case 17).—*Adenomyoma of the rectovaginal septum* (Fig. 26).

History.—Mrs. E. B. H., aged 36, referred to me by Dr. Arthur Wegefarth, entered the Church Home and Infirmary Nov. 1, 1919 (No. 22461). I had operated on this patient in 1917 for appendicitis. In August, 1919, while at

dinner, she was taken with sharp, excruciating pain beneath the right costal margin, and the pain radiated to a point just beneath the right shoulder blade. She was almost drawn double. This attack was followed by nausea and vomiting, and the pain was relieved only by morphin. Since then she had had eight similar attacks. The patient had been married twenty years and had one child, nineteen years ago. She also complained of pain in the left lower abdomen.

Examination.—On making a pelvic examination, under anesthesia, I found the uterus normal in size. The cervix was normal, but just posterior and a little to the left was a rather globular nodule 1.5 cm. in diameter (Fig. 26). This seemed fixed to the cervix posteriorly, and on inspection it was found that projecting from the vaginal vault at this point were two bluish black cysts, about 2 mm. in diameter. On rectal examination, the nodule was made out much more clearly. It was directly beneath the mucous membrane, but the mucosa had not become adherent. It was a definite adenomyoma.

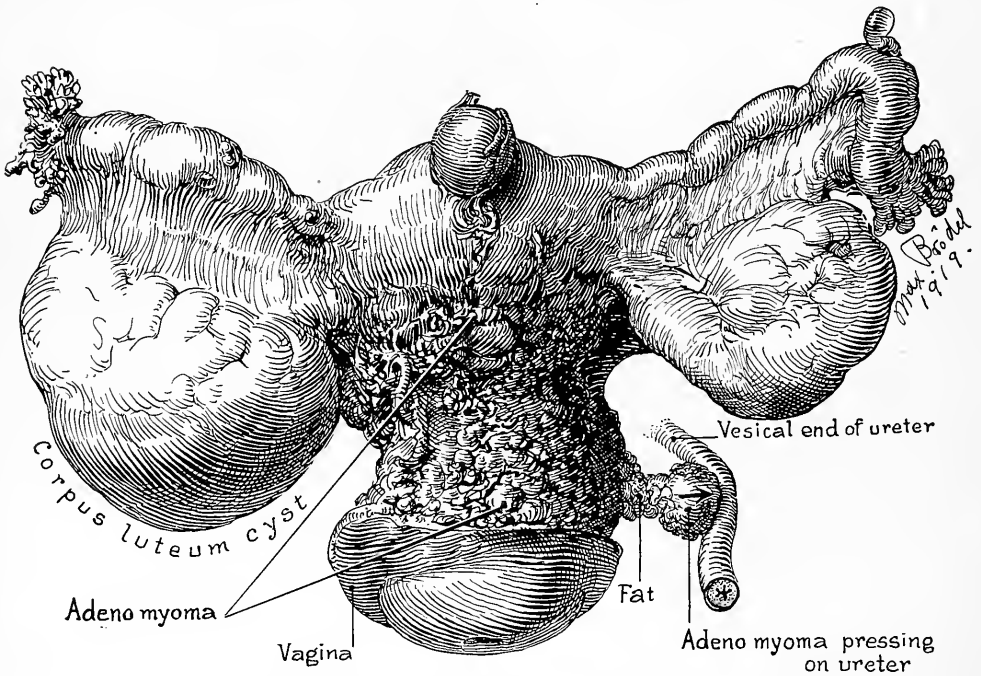


Fig. 27 (Case 10).—Adenomyoma of the rectovaginal septum; discrete and independent adenomyoma in the right broad ligament pressing on and partially obstructing the ureter. Springing from the top of the uterus is a small myoma, and attached to the posterior surface of the uterus are a few adhesions. Occupying the posterior part of the cervix and extending upward is a diffuse adenomyoma. The right tube and ovary are normal. The left tube is normal, but the ovary contains a corpus luteum cyst. In the right broad ligament is a small discrete nodule pressing on the right ureter. It is also an adenomyoma. For the histologic picture of the adenomyoma of the rectovaginal septum, see Figure 28; for that of the broad ligament nodule, Figure 29.

Operation and Result.—Nov. 4, 1919, I operated and as the patient was not complaining sufficiently of the pelvic condition, and as she had gallstones, I let the adenomyoma alone. I made a right rectus incision and exposed the gallbladder which contained a large number of small stones, the greater number of which formed two conglomerate masses, each about 1.5 cm. in diameter. Some of the smaller stones were in the cystic duct. We removed the stones

and drained the gallbladder. The patient was discharged much relieved, Nov. 29, 1919.

A few weeks later she developed a pelvic abscess which opened spontaneously into the vagina, and since then she has been perfectly comfortable. It may be necessary to remove the adenomyoma at a later date.

CASE 10 (Septum Case 18).—*Adenomyoma of the rectovaginal septum; discrete adenomyoma in the right broad ligament pressing on and partially obstructing the right ureter* (Figs. 27, 28 and 29).

History.—Miss R. M., aged 42, was referred to me by Dr. Christian Deetjen on Feb. 27, 1919, complaining of pain in the left lower abdomen. This had been more or less constant for the last ten years and had been severe for four years. The patient had pneumonia ten years ago followed by empyema. She was admitted to the Church Home and Infirmary, Oct. 20, 1919 (No. 22402).

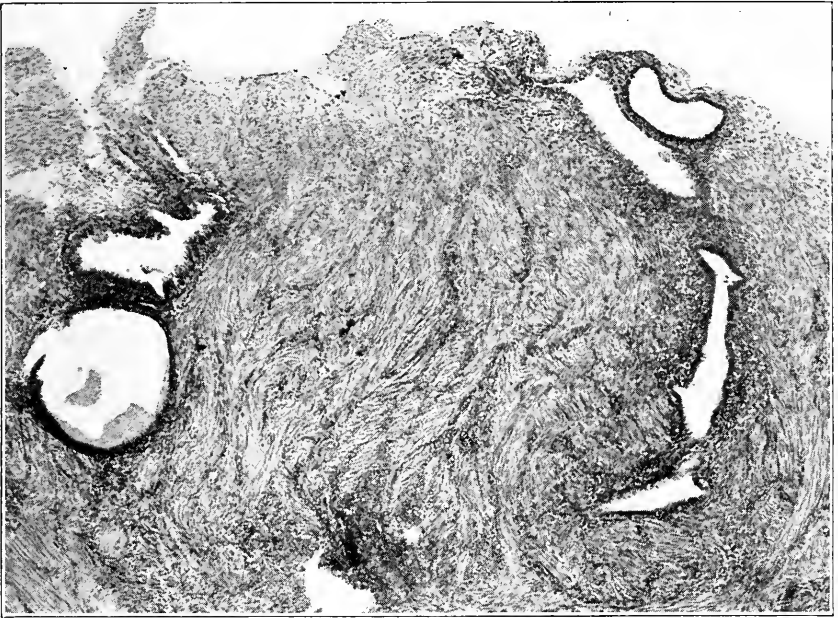


Fig. 28 (Case 10).—Adenomyoma of the rectovaginal septum. The gross specimen is shown in Figure 27. Some of the glands are surrounded by the characteristic stroma, others lie in direct contact with the muscle.

At that time a small cyst could be felt in the left side of the pelvis. Dr. Hiram Fried, the resident, felt that there might be some trouble with the ureters and suggested their catheterization. A distinct narrowing was felt on the right side not far distant from the bladder. Dr. Guy L. Hunner confirmed this finding. The right ureter was dilated on several occasions, and we finally operated on November 8.

Operation and Result.—On opening the abdomen, I found a corpus luteum cyst, 4 cm. in diameter, on the left side. This was somewhat adherent.

The rectum had grown fast to the posterior surface of the cervix and at this point the tissues presented a yellowish brown, rusty appearance. It was perfectly evident that we were dealing with an adenomyoma. We performed

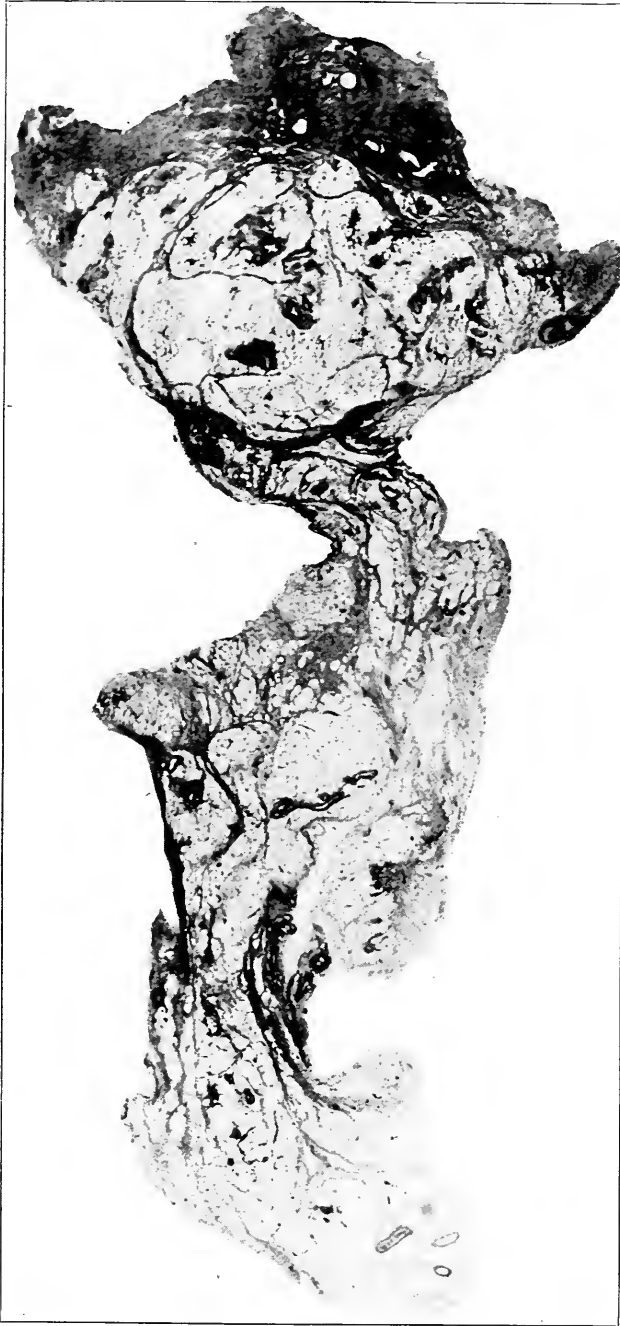


Fig. 29 (Case 10)—Discrete adenomyoma of the right broad ligament pressing on and partially obstructing the ureter. For the appearance at operation see Figure 27. At the left, where this nodule was attached to the right side of the cervix, most of the tissue consists of fat. As we pass toward the right the adipose tissue is found to be replaced in part by connective tissue. At the extreme right the tissue consists of nonstriated muscle and fibrous tissue, and scattered throughout it are a moderate number of glands resembling those of the uterine mucosa.

a complete abdominal hysterectomy. The posterior vaginal wall separated from the rectum with some difficulty, but after removal of the uterus and upper vagina the bowel showed only a slight thickening. The rectovaginal growth had extended out into the right broad ligament. After its removal we could still feel a nodule far out in the broad ligament. This was 1 cm. in diameter, encroached markedly on the right ureter and had given rise to the obstruction that had been noted by Dr. Fried in his catheterization of this ureter (Fig. 27). I dissected out the ureter, drew it to one side and removed the nodule. Two drains were left in the pelvis and brought out through the vagina.

The patient had an uneventful convalescence and was discharged Nov. 30, 1919.

Examination of Specimen (Gyn. Path. No. 25486).—The uterus is 7 cm. long, 4 cm. broad and 3 cm. in its anteroposterior diameter. Anteriorly it is smooth. The posterior surface is covered by adhesions. At the fundus posteriorly is a myoma, 1.5 cm. in diameter, and below this a minute myoma. Springing from the posterior surface of the cervix is a nodular thickening, 1.5 cm. in diameter, and extending off from this point is the nodule that was pressing on the right ureter. The uterine walls vary from 1 to 1.5 cm. in thickness, and in the fundus the muscle presents a very coarsely striated appearance reminding one somewhat of an adenomyoma. The uterine mucosa is rather thin.

Right Side: The tube and ovary are normal.

Left Side: The ovary contains a corpus luteum cyst, 3 cm. in diameter. The ovary is covered by a few adhesions.

Histologic Examination.—The vaginal portion of the cervix presents the usual appearance. The cervical mucosa is gathered into folds and tends to form small polypi. A few of the glands are dilated, but the cervical mucosa as a whole is relatively normal.

The section from the growth on the posterior surface of the cervix contains a young myoma, 3 mm. in diameter. The diffuse growth consists of nonstriated muscle and fibrous tissue. Scattered throughout it are small areas of uterine mucosa (Fig. 28). Few of these areas contain more than two uterine glands accompanied by the characteristic stroma. Here and there is a dilated gland.

The nodule from the right broad ligament, the one that was pressing on the right ureter, consists for the most part of adipose tissue (Fig. 29). Scattered throughout the fat are a good many large blood vessels and passing off from these are young strands of connective tissue which tend to separate the individual fat globules from one another. The outer end of the growth consists of an irregular mass of fibrous tissue and nonstriated muscle. This fibromuscular mass sends prolongations into the surrounding fat and in the nodule itself some fat still persists. Scattered throughout the muscular tissue are uterine glands occurring singly or in groups. When in groups, they are surrounded by the characteristic stroma which shows some hemorrhage. When singly, they lie in direct contact with the muscle. Some of the glands are dilated.

This is a case of adenomyoma of the rectovaginal septum. There is also a discrete adenomyoma apparently independent of the uterus and pressing on the right ureter.

The preceding cases have come under my individual care. The following case of adenomyoma of the rectovaginal septum is a rather advanced one and is well worth recording. The operation was per-

formed at the Hebrew Hospital by Dr. Alfred Ullman, and the specimen was sent to me for examination. The history was furnished me by Dr. E. H. Teeter.

CASE 11.—*Adenomyoma of the rectovaginal septum.*

History.—M. H., aged 46, was admitted to the Hebrew Hospital, April 24, 1919, complained of bleeding for nine weeks, and that she felt very sore and tired all over. She had not had any previous illness. Her menses began at 13, were regular, and usually lasted from seven to nine days. The flow was always excessive and was accompanied by pain in the left lower abdomen for three days. In June, 1918, her menses stopped for three months and then there was a little bleeding for a couple of days. The bleeding soon returned and had persisted for the last nine weeks. It had been very severe. On vaginal

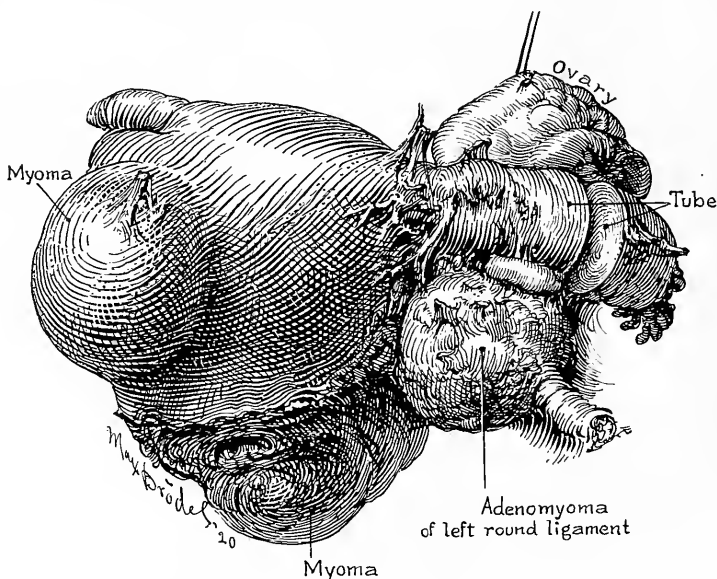


Fig. 30 (Case 12).—Adenomyoma of the left round ligament. The uterus contains several small discrete myomas. The left round ligament near its uterine attachment contains a spherical myoma, 1.5 cm. in diameter. This was adherent to the tube at its inner end. Lying between the round ligament nodule and the tube and adherent to both was a loop of small bowel. The left tube is unusually thick. Its fimbriated end is constricted but open. The tube on histologic examination showed slight inflammation. The ovary contained a corpus luteum. It was slightly adherent. For the low power picture of the adenomyoma of the round ligament, see Figure 31; for the higher power, Figure 32.

examination, April 25, Dr. Teeter made the following note: "Vaginal outlet somewhat relaxed, cervix normal. The uterus and cervix are tied hard and fast and cannot be moved. The uterus itself is normal in size.* Just posterior to the cervix is a growth in the vaginal vault causing puckering of the vaginal mucosa. This growth is hard and is glued fast to the rectum. On rectal examination, the mass is found to be adherent to the rectum, but the growth does not involve the rectal mucosa."

There was a profuse bloody discharge from the uterus and Dr. Teeter at once made a diagnosis of adenomyoma of the rectovaginal septum.

A complete abdominal hysterectomy was performed by Dr. Alfred Ullman on April 26, and the patient was discharged May 20.

Examination of Specimen (Gyn. Path. No. 25513).—The uterus is 9 cm. long, 6 cm. broad and 5 cm. in its anteroposterior diameters. The anterior surface is smooth as is also the posterior surface. Just anterior to the insertion of the right tube is a myoma, 6 mm. in diameter .

Springing from the posterior surface of the cervix and extending over to the right side and also involving the posterior vaginal wall is a hard, irregular

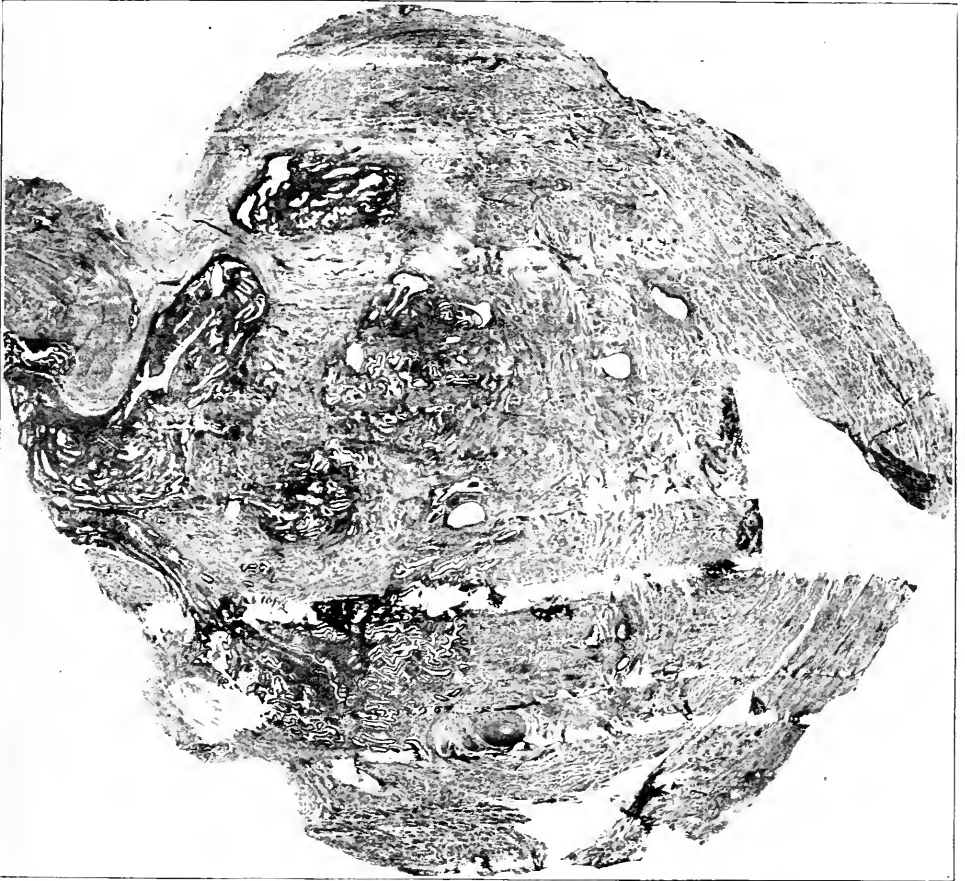


Fig. 31 (Case 12).—Adenomyoma of the round ligament. This is a low power photomicrograph of the round ligament nodule seen in Figure 30. Nearly one half of the tissue consists of islands of perfectly normal uterine mucosa. For the high power, see Figure 32.

growth, 4.5 cm. broad and 2.5 cm. from above downward. It is exceedingly firm and where it involves the vagina are five or six dark brown areas of discoloration. These vary from 1 to 2 mm. in diameter. On section, the growth reminds one of myomatous tissue, and scattered throughout it are a few irregular cavities filled with a yellowish brown or yellow material. The cavity of the uterus looks normal.

Histologic Examination.—Sections through the vaginal portion of the cervix and also through the adjoining vaginal wall reveal a normal mucosa. Beneath the vaginal mucosa the dense stroma contains isolated uterine glands. The small chocolate-colored cysts noted beneath the vaginal mucosa are filled with blood. They are lined with one layer of cylindric epithelium, and projecting into one of the cysts is a small knoblike elevation of typical stroma of the endometrium of the body of the uterus. Some of these cysts lie in direct contact with the surrounding muscular and fibrous tissue, others are separated by a definite endometrial stroma.

The growth on the posterior surface of the cervix and involving the posterior vaginal wall consists of nonstriped muscle and fibrous tissue. Here and there small areas of adipose tissue have been enveloped. Scattered throughout the growth are isolated uterine glands and groups of glands. Nearly all of these glands are surrounded by the characteristic stroma, and some of them are filled with blood.

The case is one of adenomyoma of the rectovaginal septum. It is in just such a case that we would later expect to find vaginal polypi had the operation been delayed for a year or two.

ADENOMYOMA OF THE UTERINE HORN OR FALLOPIAN TUBE

In addition to the diffuse adenomyoma of the uterus, one finds another variety of adenomyoma in this organ. These are the small adenomyomatous nodules noted in one or both uterine horns. They vary from a few millimeters to about 2 cm. in size and are often associated with an old inflammatory process in the tubes. These growths usually contain many isolated glands embedded in nonstriped muscle and inflammatory tissue. The glands usually lie in direct contact with the muscle and are devoid of the characteristic stroma. Adenomyoma of the uterine horn can, as a rule, hardly be looked on as a distinct clinical entity, but rather, I think, as part of the end-result of a mild inflammatory process.

In a case (Gyn.-Path. No. 25515) in which we had a bicornate uterus, and a most extensive adenomyoma of the right cornu, the left tube 2 cm. beyond the uterine horn was 1 cm. in diameter. On histologic examination, it was found to be the seat of an adenomyoma. Some of the glands lay in direct contact with the muscle, others were surrounded by the typical stroma of the uterine mucosa. I know of no other tube presenting such a picture.

ADENOMYOMA OF THE ROUND LIGAMENT⁴

In 1896, it fell to my lot to record the first growth of this character. Since then quite a number have been noted. Somewhere along the course of the round ligament, usually near the external ring, a nodule

4. Cullen, T. S.: Adenomyoma of the Round Ligament, Bull. Johns Hopkins Hosp. 7:112 (May-June) 1896; Further Remarks on Adenomyoma of the Round Ligament, Bull. Johns Hopkins Hosp. 9:142 (June) 1898; Adenomyoma of the Round Ligament, and Incarcerated Omentum in an Inguinal Hernia, Together Forming One Tumor, Surg., Gynec. & Obst. 22:258 (March) 1916.

one or more centimeters in diameter is detected. On going carefully into the history, it will be noted that this growth swells perceptibly at the period. One patient was sent to me on the assumption that a hernia existed, but even in this case in the history it was recorded that the swelling was more painful and more prominent at the period.

With the gradual increase in size of the nodule it may become intimately blended with the fascia. In my second case the diagnosis was easily confirmed at operation, even before any microscopic examination had been made. The surrounding fascia had imbibed a large amount of golden yellow pigment—the remnant of old menstrual blood.

Some of these growths can be removed very readily, others, however, in time may become so intimately blended with the surrounding structures that they must be literally cut away. On histologic examination, they are found to be made up of nonstriped muscle, fibrous tissue, and the characteristic uterine glands. Strands of fibrous tissue and nonstriped muscle spread out into the surrounding adipose tissue..

Just lately (April, 1920) we have encountered another case of adenomyoma of the round ligament in our clinic in the Johns Hopkins Hospital (Fig. 30).

CASE 12 (Gyn. No. 25776).—*History*.—E. S., aged 36, white, was admitted to the Johns Hopkins Hospital on April 1, 1920, complaining of dysmenorrhea and of bleeding between periods. She had been married four years, but had had no children.

Examination.—On pelvic examination, the outlet was found to be relatively intact. Protruding from the cervix was a small polyp. The body of the uterus was in retroposition, was irregular and apparently contained five or six small myomatous nodules. High up in the left vaginal fornix was a mass, 2 or 3 cm. in diameter.

Operation and Result.—April 3, 1920, Dr. Leo Brady operated and found the uterus in retroposition. It contained several small myomas. In the left round ligament near the uterus was a nodule nearly 2 cm. in diameter. The tube was adherent to this and also to a loop of small bowel. The right appendages were free. After the loop of bowel had been freed, a supravaginal hysterectomy was performed. The patient made a satisfactory recovery except for a slight elevation of temperature during the first week following operation when there was a friction rub. This was thought to be due probably to a lighting up of an old pleurisy. She was discharged in good condition on April 21, 1920.

Examination of Specimen (Gyn. Path. No. 25850).—The uterus, which had been amputated through the cervix, measures 5 cm. in length, 5 cm. in breadth and 4 cm. in its anteroposterior diameters. It contains several interstitial myomas. In the left round ligament near the uterus is a spherical nodule 1.5 cm. in diameter (Fig. 30). This is partly covered by adhesions. The left tube reaches a diameter of 1 cm. Its fimbriated end is constricted but open. The ovary is normal in size. It contains a corpus luteum and is partly covered by adhesions.

Histologic Examination.—This shows that the nodule in the left round ligament is riddled with large islands of typical uterine mucosa (Figs. 31 and 32).

UTERINE MUCOSA IN THE OVARY

In 1898 my colleague, Dr. William Wood Russell, reported a case in which the ovary, although showing little increase in size, contained large islands of uterine mucosa. The report of this case was published

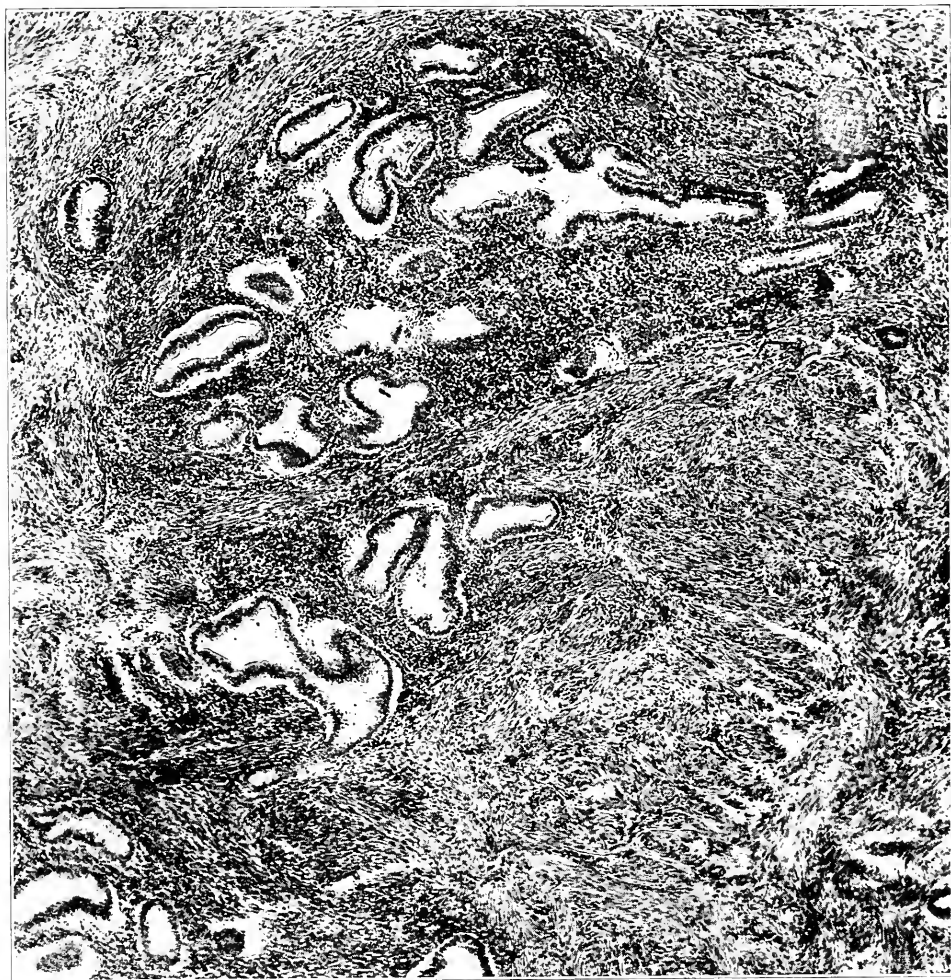


Fig. 32 (Case 12).—Adenomyoma of the round ligament. For the gross appearance, see Figure 30, and for the low power picture, Figure 31. The round ligament nodule consists of myomatous tissue. It contains large quantities of normal uterine mucosa.

in detail in the *Bulletin of Johns Hopkins Hospital* for that year, and the article is freely illustrated.

Within the last year Dr. Charles Norris of Philadelphia sent me a section of a relatively small ovary containing a large island of normal uterine mucosa (Figs. 33 and 34).

Dr. DeWitt B. Casler, of our department, at the 1919 meeting of the American Gynecological Society reported a unique case which has a definite bearing on this subject.

The patient, a trained nurse, 38 years of age, had had excessive periods for one year. On examination the uterus was found to be three times its usual size. Hysterectomy was performed. The increase in size was due to a diffuse myomatous thickening, and scattered throughout this diffuse growth were quantities of stroma identical with that of the uterine mucosa. This stroma, however, contained no glands. The tumor resembled in every particular the picture of an ordinary adenomyoma of the uterus save for the fact that the glands were missing from the stroma.

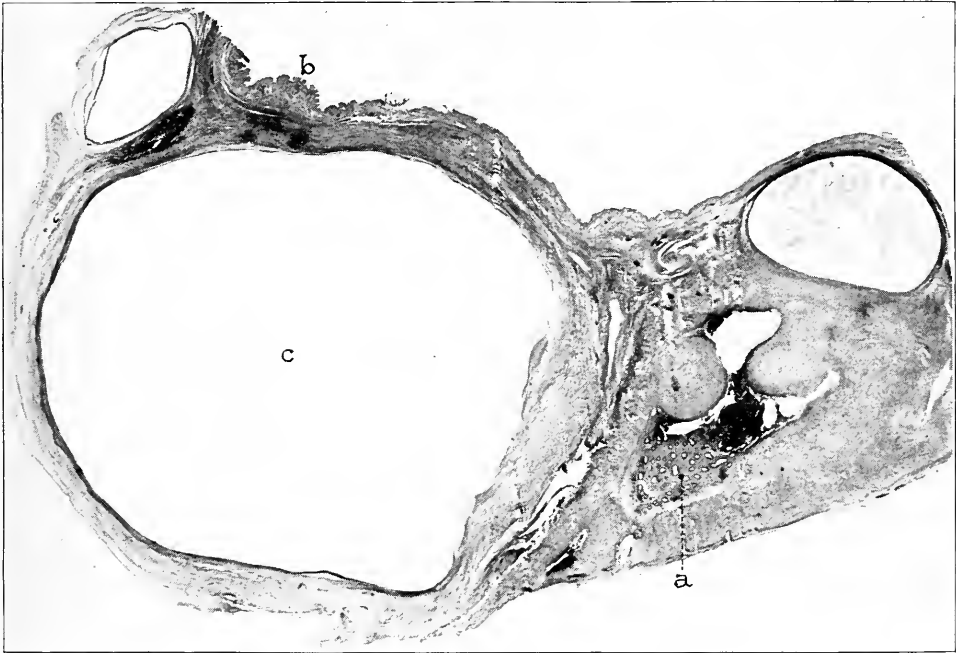


Fig. 33.—An ovary containing uterine mucosa. This is a very low power photomicrograph of a section through an entire ovary that was little enlarged. It was sent me by Dr. Charles Norris of Philadelphia. On the left is a relatively small cyst, *c*. At *a* in the substance of the ovary is a large area of typical uterine mucosa. This is connected with an irregular cyst cavity. On the upper edge of the section is normal tubal mucosa, *b*. The tubes have evidently been intimately adherent to the ovary. In Figure 34 one sees a higher magnification of the mucosa.

This patient after the complete hysterectomy still continued to menstruate regularly through the vaginal vault. A vaginal examination about three and one-half years after the hysterectomy revealed the fact that the ovary which had been left was perfectly normal in size. A little later it commenced to grow larger and when the abdomen was opened four years after the hysterectomy, this ovary was the size of a medium-sized grape fruit.

On histologic examination great quantities of typical uterine mucosa were found scattered throughout the ovarian tumor, thus clearly explaining why the

patient had continued to menstruate without any uterus. The ovary contained all the essential elements, normal ova, and practically normal uterine mucosa, and the small tract left where the uterus had been removed supplied the necessary avenue along which the menstrual flow escaped.

In the following case, in which the uterus was about three times enlarged as a result of interstitial and submucous myomas and in which the appendages were glued together by adhesions, the right ovary contained small areas of typical uterine mucosa.

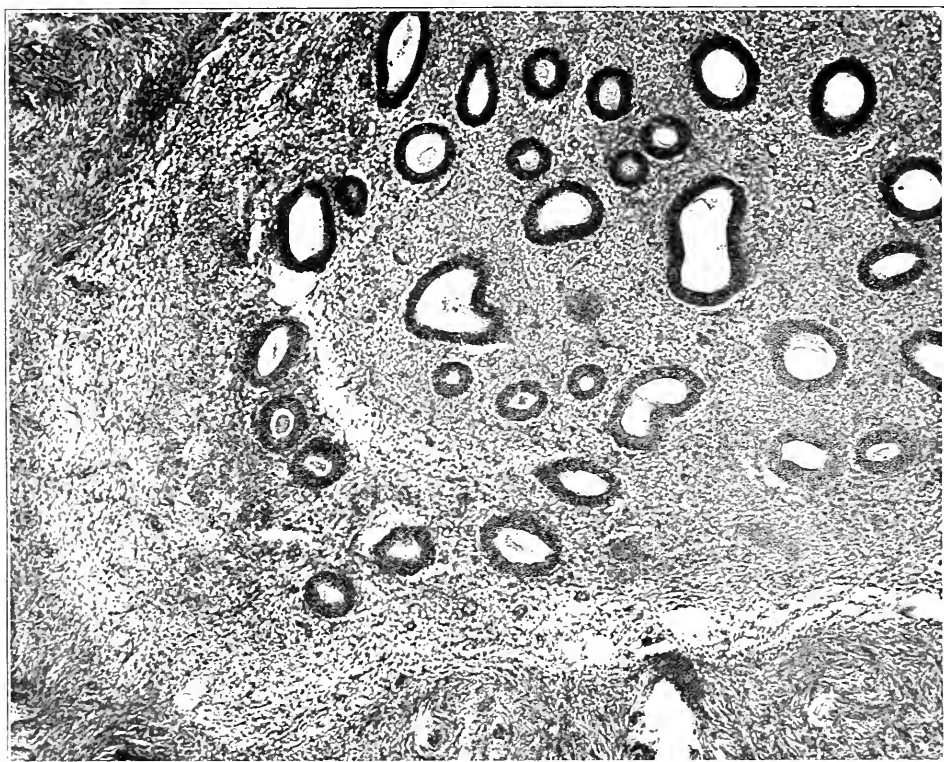


Fig. 34.—Uterine mucosa in the ovary. This specimen was sent me by Dr. Charles Norris of Philadelphia. For the low power picture, see Figure 33. The area of mucosa is sharply defined and consists of typical uterine mucosa embedded in the substance of the ovary.

CASE 13.—*A myomatous uterus with adherent appendages on the right side, and on the left a small ovarian cyst containing uterine mucosa in its walls* (Figs. 35 and 36).

Examination of Specimen (Gyn. Path. No. 22505, Sept. 19, 1916).—The specimen consists of the supravaginally amputated myomatous uterus together with the appendages (Fig. 35).

The portion of the uterus present is 10 cm. long, 10 cm. broad and 10 cm. in its anteroposterior diameter. At the fundus anteriorly are a few omental adhesions. Occupying the posterior wall of the uterus is a myoma 8 cm. in diameter. Scattered throughout the anterior wall are several nodules, the

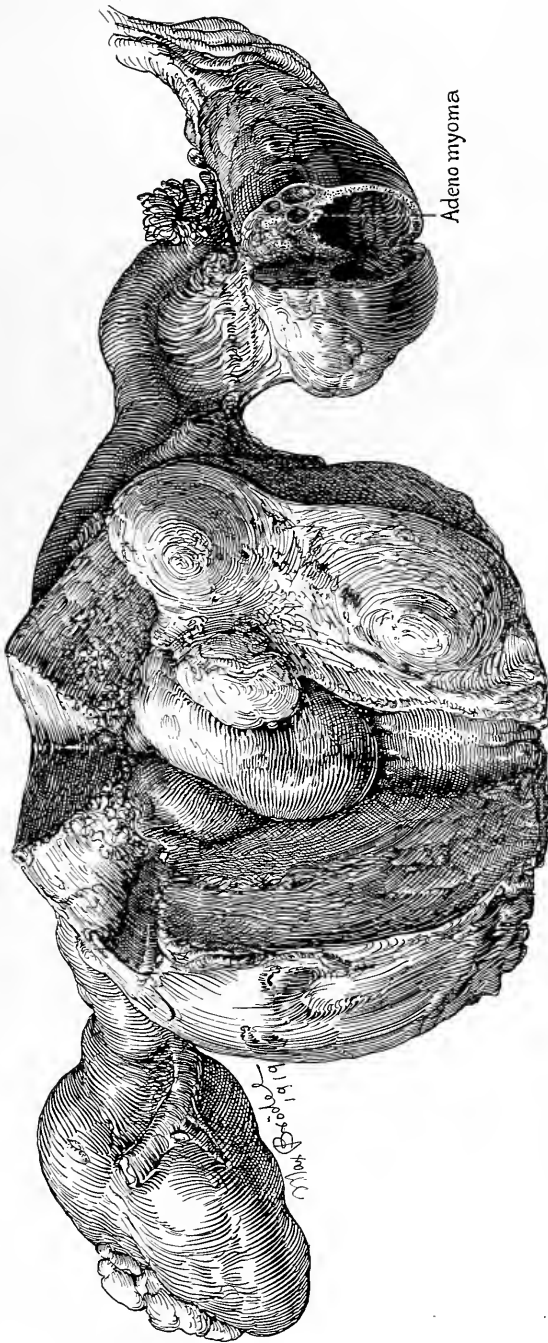


Fig. 35 (Case 13).—A myomatous uterus with adherent appendages on the right side and on the left a small ovarian cyst containing uterine mucosa in its walls. The uterus contains subperitoneal, interstitial and submucous myomas. The left ovary contains a cyst lined in part by uterine mucosa (Fig. 36).

largest 3 cm. in diameter. Projecting into and filling the cavity of the uterus is a myoma, 4 cm. long and 2.5 cm. broad.

Right Side: The tube is 8 cm. in length and varies from 8 to 10 mm. in diameter. Its fimbriated end is free. The ovary is 7 cm. in length. It reaches a thickness of 2.5 cm. Attached to the outer end is a moderate amount of fat. This appears to be omental in character. In the lower end of the ovary is what appears to be a collapsed corpus luteum cyst. It is about 4 cm. in length.

Left Side: The tube is 11 cm. long. At the cornu, it is 1.3 cm. in diameter. In its middle portion, it is a little smaller, but in its distal 5 cm. it varies from 2 to 2.5 cm. in diameter. Where dilated it has thin walls, a brownish inner surface and apparently contains old blood. Its fimbriated end is closed and between the closed end and the ovary, omental fat has become densely adherent. The ovary is 6 cm. long and varies from 2 to 3 cm. in thickness. It is covered by adhesions.

Histologic Examination.—It is difficult to get the exact relationship on account of the ragged condition of the specimen, but on microscopic examination of the left ovarian cyst, which was lined with a brownish membrane, it is seen that the cyst has an inner lining of cylindric epithelium which here and there tends to form folds. At some points beneath the epithelium there is a definite stroma and embedded in this are a few glands (Fig. 36). The cyst is partially filled with blood.

In a case (Gyn.-Path. No. 25003) in which the uterus was 13 by 11 cm., the enlargement was due to a submucous myoma. On the posterior surface of the cervix and lower part of the body of the uterus was the most widespread adenomyoma of the rectovaginal septum that I have even seen (Fig. 16). I had literally to cut the cervix away from the rectum.

On the surface of, and intimately attached to, the right ovary was a miniature uterine cavity (Fig. 21). The glands in this showed a moderate hypertrophy. Other sections from the same ovary showed a diffuse adenomyoma intimately blended with the ovarian tissue, so intimately that no line of demarcation could be detected. It must be remembered, however, that this ovary was firmly glued to and continuous with the diffuse adenomyoma that occupied the posterior surface of the uterus. It is quite possible that the uterine mucosa on the surface of this ovary was due to an overflow of the adenomyoma of the rectovaginal septum.

On Oct. 25, 1919, I received a very interesting letter from Dr. Otto Schwarz of St. Louis. In it he referred at length to several cases of adenomyoma that he had recently seen. Among other specimens examined was one in which the ovary contained uterine mucosa. Dr. Schwarz said:

The ovarian case was most interesting; this ovary was removed about a year and a half ago. It was about the size of a hen's egg and showed nothing unusual externally. On section it showed several cavities which were filled with blood, partly clotted. Two large blocks were cut transversely across



Fig. 36 (Case 13).—A small ovarian cyst lined in part by uterine mucosa. The débris in the upper part of the picture is composed chiefly of old blood. The cyst wall is lined by one layer of cylindric epithelium. In places, this lies in direct contact with the ovarian tissue, but here and there is separated by a definite stroma. Near the right, the stroma is very evident, and embedded in it is a gland resembling those of the body of the uterus. For the gross appearance, see Figure 35.

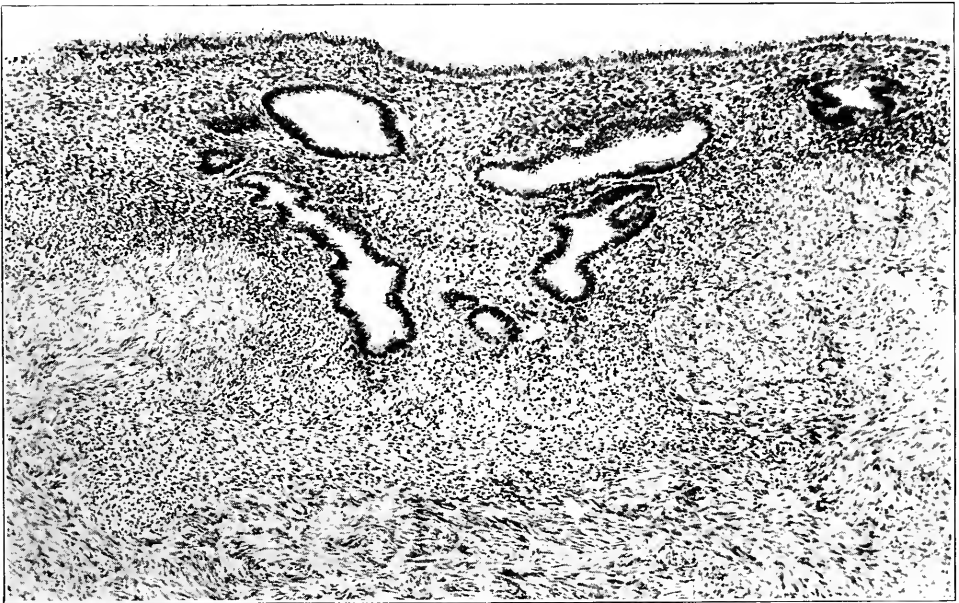


Fig. 37.—Uterine mucosa lining a small cyst in the ovary. The specimen was sent me by Dr. Otto Schwarz of St. Louis, Mo. The cyst wall is lined with cylindric epithelium. Beneath this in the central portion of the picture is a definite mucosa consisting of stroma and glands similar to those found in the body of the uterus.

the ovary. . . . In one of the sections I enclose the mucosa appears to communicate with the surface but this is due to a tear. Throughout the entire two blocks, the abnormal structure was well within the ovary. The sections show the lesion well demarcated from the rest of the stroma of the ovary. There are two cavities. These are lined with tissue similar to the endometrium.

I had the opportunity of examining other sections of the ovary with Dr. Schwarz in his laboratory at the Washington University in St. Louis a few months later. It is a beautiful example of an ovary containing miniature uterine cavities. Figure 37 is a photomicrograph that I have had made from one of Dr. Schwarz' sections.

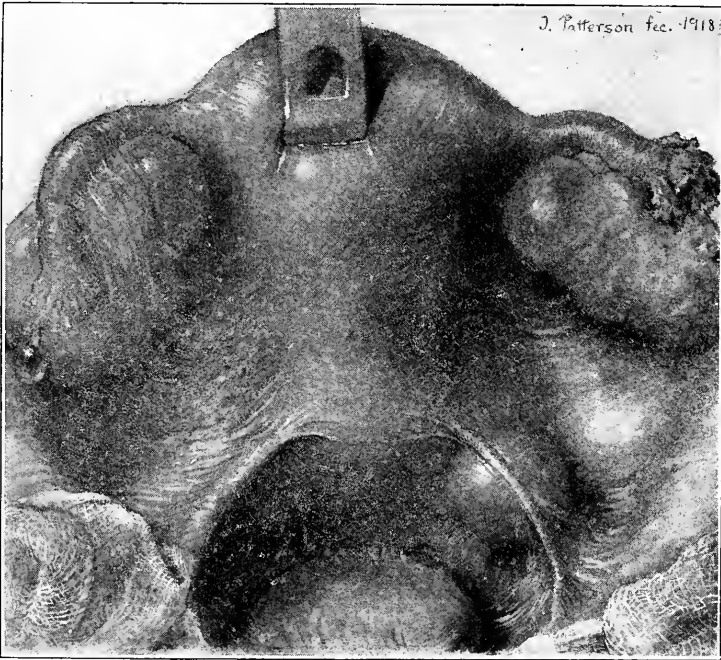


Fig. 38 (Case 14).—Cyst of the right uterosacral ligament. During an operation for general pelvic adhesions, the cyst noted in the right uterosacral ligament was found. It was rather spherical, 1.5 cm. in diameter, and was filled with brownish putty-like material. It at once reminded me of an adenomyoma. Histologic examination, however, failed to reveal glands or any epithelial lining to the cyst.

From the foregoing it is evident that in due time a sufficient number of cases will undoubtedly be reported, and then we shall possibly be able to give a composite picture of both the clinical course and of the histologic changes that occur in this most unusual group of cases.

ADENOMYOMA OF THE UTERO-OVARIAN LIGAMENT

These are naturally of little clinical significance and will be recognized only in the laboratory. I have reported one case. A multinodular myomatous uterus was removed, and springing from the

utero-ovarian ligament was a myoma several centimeters in diameter. In the center of this were islands of typical uterine mucosa.

(This case was reported at length in my book on Adenomyoma of the Uterus, page 140, Figs. 41 and 42.)

ADENOMYOMA OF THE UTEROSACRAL LIGAMENT

Several years ago my colleague, Dr. William Wood Russell, removed a pea-sized nodule from the right uterosacral ligament. On histologic examination it presented a typical adenomyomatous picture.

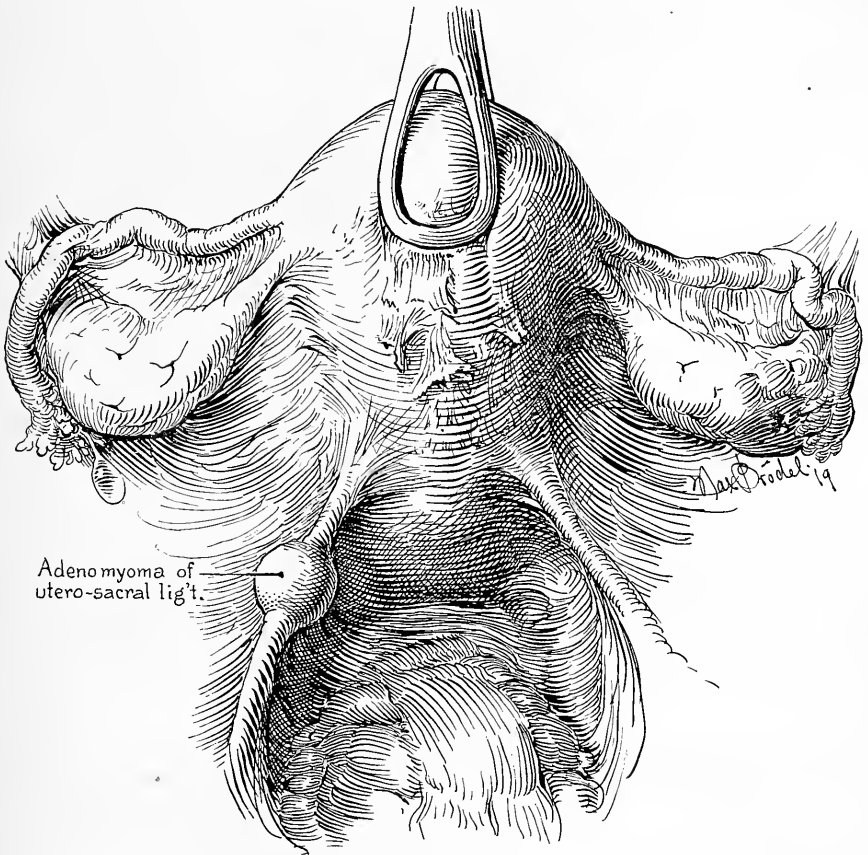


Fig. 39 (Case 15).—Adenomyoma of the left uterosacral ligament. On the posterior surface of the uterus are numerous adhesions. Both ovaries were lightly adherent. It was possible to save all the pelvic structures. In the left uterosacral ligament is a well circumscribed spherical nodule. This had a slightly yellowish brown tinge. For the histologic picture, see Figure 40. It was a typical adenomyoma.

Since then I have seen a cyst 1.5 cm. in diameter apparently springing from the right uterosacral ligament. It contained yellowish-brown putty-like material. It may belong to this group, but of this I cannot speak with certainty as the histologic picture was not very definite.

CASE 14.—*Possible adenomyoma of the right uterosacral ligament* (Fig. 38).

History (Gyn. No. 23906).—A B., aged 28, colored, was admitted to the Johns Hopkins Hospital on April 5, 1918. In the course of an operation for intestinal and omental adhesions and bilateral ovarian cyst, a small nodule was found in the right uterosacral ligament.



Fig. 40 (Case 15).—Adenomyoma of the left uterosacral ligament. For the gross appearance of the nodule, see Figure 39. Some of the glands lie in direct contact with the muscle, others are surrounded by the characteristic stroma.

Operation and Result.—The midline scar of a previous operation was excised. The omentum was found adherent along the line of the old scar. Scattered over the omentum and over the pelvic peritoneum were several small nodules varying from 2 to 3 mm. in diameter. These were made up of a brownish, putty-like material.

The body of the uterus was firmly attached to the abdominal wall to which it had evidently been sutured at a former operation. It was freed. There was a cyst about 5 cm. in diameter on the left side; this was resected. On the right side was a small cyst. This was also resected.

A tumor about 1.5 cm. in diameter was seen in the right uterosacral ligament, 3 cm. from the cervix (Fig. 38). This tumor felt rather firm and was covered with peritoneum. I dissected the right ureter free and pushed it outward. The peritoneum over the tumor was then opened, and the tumor

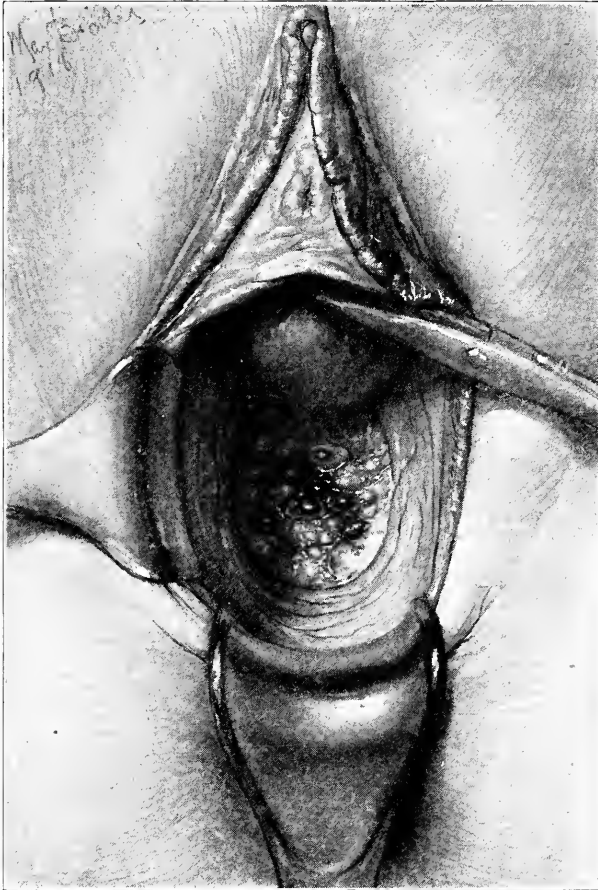


Fig. 41 (Case 16).—Adenomyoma of the rectovaginal septum. The neck of the uterus has been drawn strongly forward. Just posterior to the cervix is an oval and slightly raised area about 2.5 by 2 cm. The surface of this is roughened and lobulated. The surfaces of some of the lobulations are somewhat cystic and a few of them were bluish black, indicating that they contained old menstrual blood. This area was firmly fixed to the right side of the pelvis. For the abdominal picture, see Figure 42, and for the histologic picture, Figure 43.

found to be yellowish red. It was excised. During its removal there was an escape of a light yellow, oily, caseous material. The peritoneum was brought together and the abdomen closed. A small cigaret drain was laid in the lower angle of the abdominal incision. The patient was discharged April 29, 1919.

Examination of Specimen (Gyn. Path. No. 23986).—The specimen consists of a collapsed cyst, 1.5 cm. in diameter. This, as noted at operation, apparently sprang from the right uterosacral ligament. It contained yellowish brown, putty-like material which escaped during the operation.

Histologic Examination.—This revealed a wall consisting in large measure of fibrous tissue. There was no trace of epithelium.

Clinically, this case bore a striking resemblance to an adenomyoma, but whether it was actually an adenomyoma that had undergone retrograde changes, it is, of course, impossible to determine. We can think of nothing else that would occasion such a condition.

On May 20, 1919, I operated on a patient who had numerous pelvic adhesions. In the left uterosacral ligament a short distance from the uterus was a rounded nodule 1.5 cm. in diameter. I isolated the left ureter and then removed the nodule, bringing the several ends of the ligament together again. This nodule on histologic examination proved to be a typical adenomyoma. The case is as follows:

CASE 15.—*Adenomyoma of the uterosacral ligament* (Figs. 39 and 40).

History.—Miss N. E. T., aged 36, white, was admitted to the Church Home and Infirmary (No. 21398) on May 19, 1919. I saw her in consultation with Dr. A. E. Plumb on April 24. Her menses began at 15. At first, they were regular, but for a year they had at times been a week ahead. On the second day they were accompanied by a good deal of pain. The last period had begun two weeks before I saw her.

Two years ago, she had an attack of acute appendicitis and for six months had had intense pain above the pubic bone. On examination, I found that she had a good deal of discomfort just above the symphysis and some tenderness in the appendix region. The outlet was slightly relaxed, the cervix was forward, the body of the uterus back on the bowel. No thickening could be made out on either side.

Operation and Result.—May 20, 1919, we dilated thoroughly. On opening the abdomen, we found the body of the uterus adherent to the rectum. Both tubes and ovaries were also adherent. The adhesions were loosened and the fimbriated ends of both tubes were found to be normal.

In the left uterosacral ligament was a thickening, 1.5 cm. in diameter (Fig. 39). This had a slightly yellowish brown tinge. It strongly suggested an adenomyoma, but I could not say with any degree of definiteness because the ovary was adherent over it. The ovary, however, did not contain any corpus luteum. After releasing the adhesions, we dissected out the left ureter so that we would know exactly where we were. We then cut away the growth from the left uterosacral ligament and in so doing cut across the uterine artery which was immediately grasped and tied. After cutting away the growth in the uterosacral ligament, we brought the ends of the ligament together with catgut, made a purse-string suture over the area and drew things together leaving the site of the nodule perfectly smooth. We then attached the fundus to the anterior abdominal wall with one plain and two chromicized catgut sutures just to hold the uterus up in position for a month or two and give it a chance to diminish in size. We feared there might be a low grade infection and consequently did not attempt to shorten the round

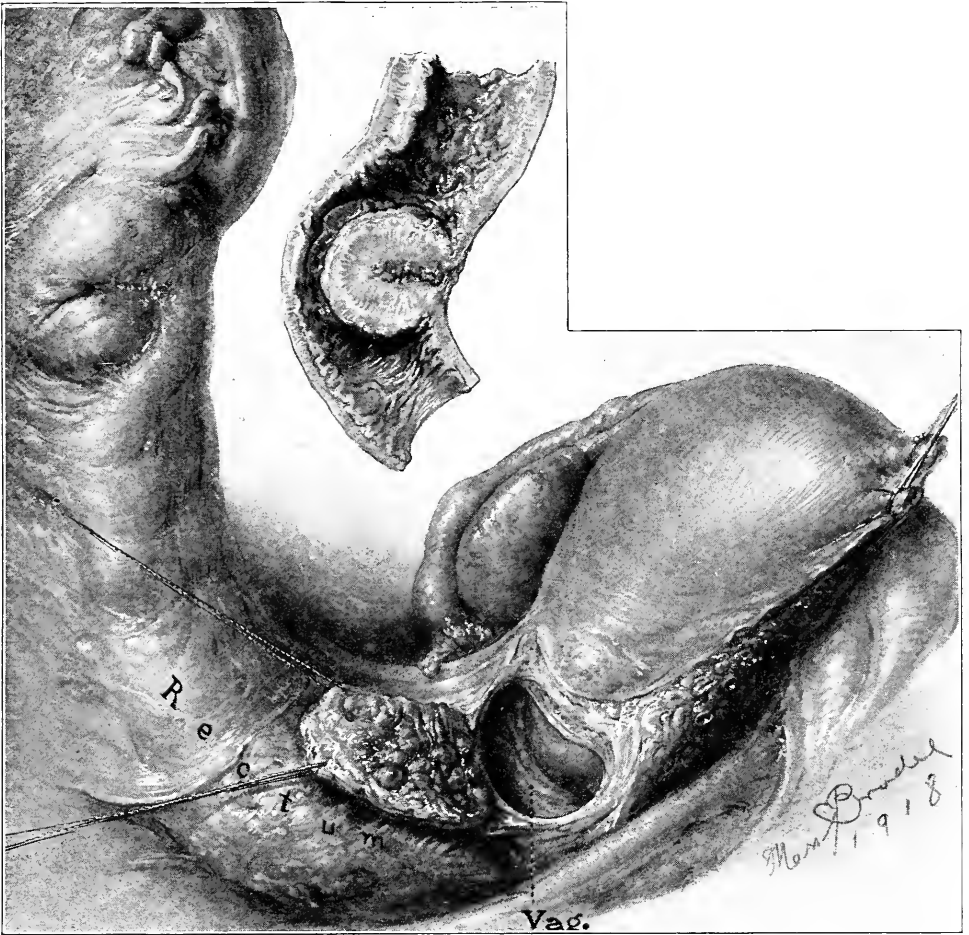


Fig. 42 (Case 16).—Adenomyoma of the rectovaginal septum, independent adenomyoma of the sigmoid almost completely blocking the lumen of the bowel. The right appendages have been removed, the right broad ligament opened up, the right uterine artery ligated and cut and the ureter dissected out. The vagina has been opened and the adenomyomatous thickening on the posterior vaginal wall cut away from the vagina and left attached to the rectum. We were preparing to push the adenomyomatous area together with the adjacent rectum down so that it would be entirely extraperitoneal and so that it could be removed through the vagina a few days later. At this moment, however, we noted the puckered area at the pelvic brim. This bore a strong resemblance to carcinoma, but no metastases could be found, so we came to the conclusion that it also might be an adenomyoma. The peritoneum of the sigmoid was then severed on either side to a point well above this second growth, the entire mass was pushed down to the pelvic floor and the peritoneum so drawn over it that the entire area was practically extraperitoneal. The abdomen was then drained. We expected to remove the entire diseased area from below at a later date. The patient, however, died of infection. At necropsy the sigmoid growth was found, as indicated by the picture, to have blocked almost completely the lumen of the bowel. It was a typical adenomyoma. This accounted for the fact that the bowel symptoms were so marked at the time of menstrual period. For the histologic picture of the adenomyoma of the sigmoid, see Figure 43.

ligaments. We removed the appendix which was small, but the meso-appendix showed scars of old trouble. The patient was discharged June 12, 1919.

September 22, the patient looked very much better. The uterus was in perfect position and there was no thickening anywhere in the pelvis.

Examination of Specimen (Gyn. Path. No. 25042).—It was noted at the time of operation that this nodule was 1.5 cm. in diameter. On section it is found to be composed of nonstriped muscle and fibrous tissue, and embedded in this are one or more minute discrete myomas. This nodule also contains a small amount of adipose tissue. The myomatous and fibrous tissue tends to spread out into the surrounding fat. Scattered throughout the diffuse myoma are numerous glands (Fig. 40) lined with one layer of cylindrical epithelium. A few of the glands occur singly and lie in direct contact with the muscle. They tend, however, to occur in groups and are surrounded by the characteristic stroma. Some of the dilated glands contain fresh blood, others débris and exfoliated epithelial cells which have swollen, become spherical and contain yellowish brown pigment—the remnant of old menstrual blood.

This is a well defined example of adenomyoma of the uterosacral ligament.

ADENOMYOMA OF THE SIGMOID FLEXURE

In February, 1918, Dr. Thomas E. Neill of Washington, D. C., referred to me a patient, aged 26, complaining of most excruciating menstrual periods. Since April, 1917, she had had diarrhea and with the beginning of each period she would have definite intestinal spasms three or four times a day. These would last two days and they would occur just at the time the patient went to stool. In September, she was put on a milk and egg diet. Her digestion was very much upset and she became constipated. During the last three or four periods she had had pain in the lower bowel commencing about twenty-four hours before the period. She also had some bleeding from the bowel and had spasmodic contraction of the lower bowel causing nausea and retching.

On vaginal examination, I found a hard, slightly nodular and raised area in the vaginal vault directly behind the cervix. It was evident that this tumor contained several small cysts.

At operation we found, in addition to the adenomyoma of the rectovaginal septum, an independent growth in the sigmoid near the pelvic brim. This presented the typical appearance of carcinoma and I at once carried my hand up to the liver to see if there were any metastases. None being felt, I thought there might possibly be some relationship between the adenomyoma of the septum and that near the pelvic brim. As the patient's condition was not very good, we just loosened up the sigmoid and drew it down extraperitoneally hoping to remove it at a second operation a few days later. Unfortunately, the patient developed a streptococcus peritonitis and died. At necropsy, it was found that the sigmoid growth was a typical adenomyoma and that there was not the slightest trace of cancer.

This case is of such interest that I shall report it in detail.

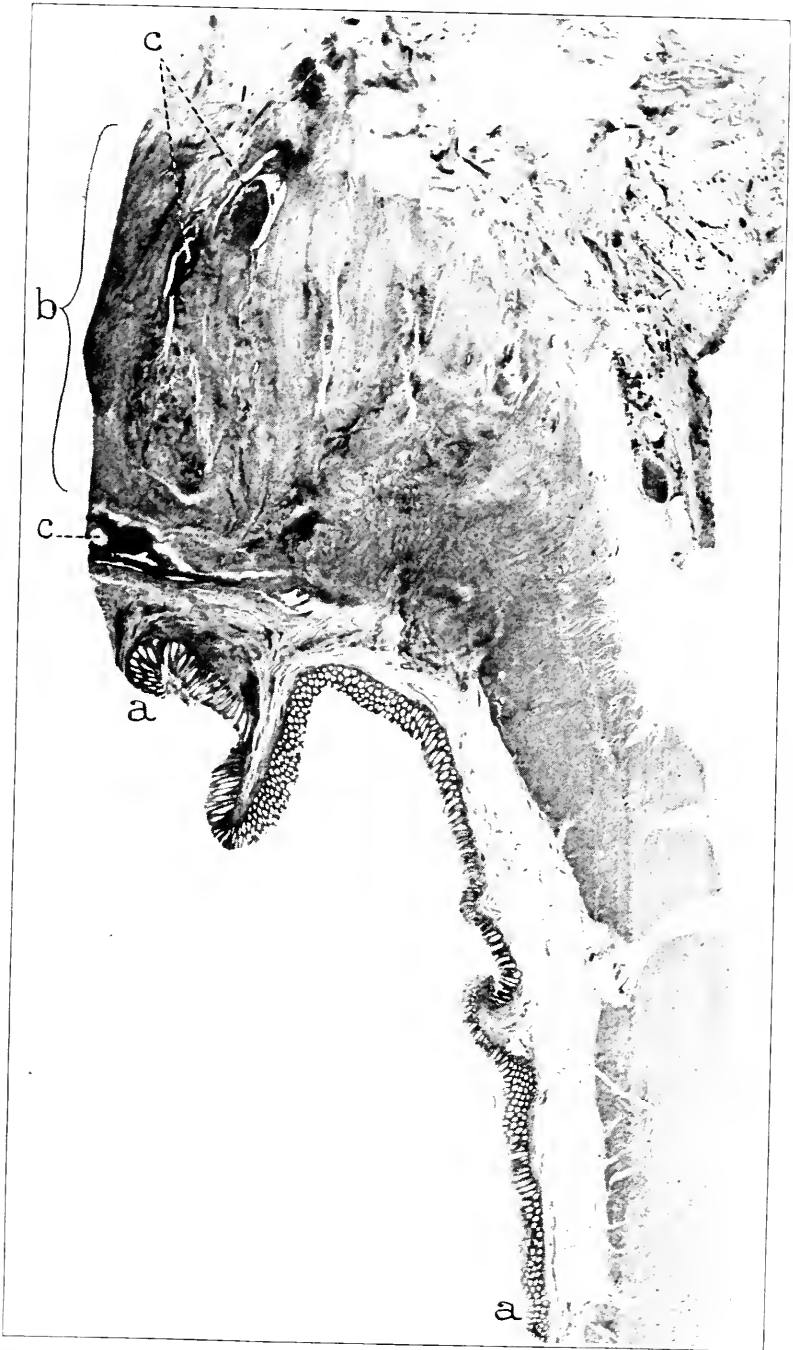


Fig. 43 (Case 16).—Adenomyoma of the sigmoid flexure totally independent of a coexisting adenomyoma of the rectovaginal septum. This is a photomicrograph of a section taken from the sigmoid growth seen in Figure 42. The rectal mucosa, *a*, is perfectly normal. At *b* the underlying muscular walls are greatly thickened. Scattered throughout the muscular tissue were uterine glands surrounded by the characteristic stroma. The tissue was unusually brittle, and it was impossible to obtain thin sections. Nevertheless, at *c* we can recognize glands and stroma in the muscle.

CASE 16 (Septum Case 19).—*Adenomyoma of the rectovaginal septum with an independent adenomyoma in the sigmoid flexure near the pelvic brim, clinically closely simulating a carcinoma of the sigmoid and markedly narrowing the lumen of the bowel* (Figs. 41, 42 and 43).

History (Gyn. No. 23764, Gyn. Path. No. 23891).—Mrs. G. S., aged 26, was referred to me by Dr. Thomas E. Neill of Washington on Feb. 11, 1918. Her menses began at 13. When 14, they occurred every three weeks. She was dilated and curetted when 16, and was gradually having more comfortable periods. The flow now lasted three and four days, formerly it lasted from ten days to two weeks. She had had severe headaches, but these had been

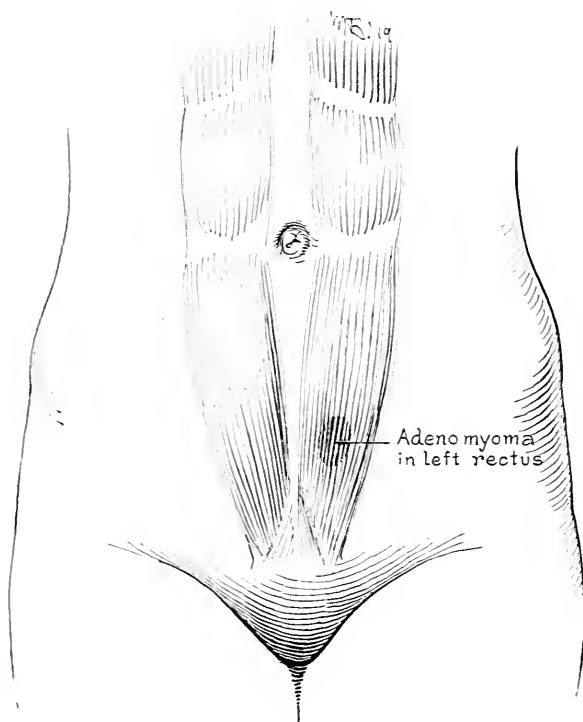


Fig. 44.—Adenomyoma in the left rectus muscle. Dr. Shallenberger's case. For the histologic picture, see Figures 45 and 46.

diminishing. She had also had the marked intestinal symptoms referred to above. Her last period was two weeks before I saw her. She gave no history of any previous serious illness.

Examination.—On pelvic examination, the outlet was found to be slightly relaxed, the cervix pointed forward. Just behind the cervix was a globular, somewhat lobulated mass, 2 cm. across, 2 cm. from above downward. It commenced directly behind the cervix. The body of the uterus itself was normal in size, in good position, and no thickening could be made out on either side.

On admission to the Johns Hopkins Hospital, the patient had hemoglobin of 78 per cent. She was in rather poor condition and I put her on forced

nourishment for two weeks before attempting any abdominal procedure. Dr. M. Bloomfield examined the lungs and found evidence of old tuberculosis in the left apex.

Operation and Result.—April 4, 1918, we operated. First of all we grasped the posterior lip of the cervix and drew it forward, put a retractor in posteriorly and then one on the right. We were then enabled to see an oval area, about 2.5 by 2 cm., directly behind the cervix (Fig. 41). This was slightly nodular and in the center of some of the nodules was a shiny condition indicating that at such points a small cyst existed. One or two of these were bluish black in color, and there was absolutely no doubt that we were deal-



Fig. 45.—Adenomyoma in the left rectus muscle. For the location of the tumor, see Figure 44. The nodule consisted of nonstriated muscle and fibrous tissue, and scattered throughout it were areas of typical uterine mucosa.

ing with an adenomyoma of the rectovaginal septum. The edge of the growth was slightly raised, probably 1 mm. from the surface of the vaginal mucosa. We made an incision posterior to the cervix, separated the cervix from the vagina and then on the right side we cut the vaginal mucosa near the growth and loosened it up as much as possible. We then packed the vagina tightly with gauze and made a median abdominal incision. The right tube and ovary were removed in order that we might get into the right broad ligament satisfactorily. We dissected out the right ureter, cut the right uterine artery and

then separated the bladder peritoneum from the anterior surface of the uterus to a point slightly beyond the median line. We gradually loosened up the growth in the right broad ligament from the peritoneum on the right side of the rectum for a short distance and then cut the vaginal mucosa around it so that we finally had the uterus shoved over to the left side and a button of the vaginal mucosa containing the growth still left attached to the rectum (Fig. 42). We had partly closed the vagina, after pulling the rectal growth down into it, when we noticed a constriction about six inches above where the rectal growth had been. Whether the growth in the upper part of the sigmoid was carcinoma or not it was impossible to tell. After examining the pelvic glands and also the liver and finding no evidence of metastases nor any enlarged lymph glands, I came to the conclusion that this might be another adenomyoma, although I had never seen one in such a position. We cut the peritoneum on either side of the sigmoid up as high as the pelvic brim,



Fig. 46.—Adenomyoma in the left rectus muscle. For the location of the tumor, see Figure 44. Scattered throughout the myoma are areas of normal uterine mucosa.

loosened up the rectum as far as possible without interfering with its blood supply and then pushed the sigmoid well down into the pelvis and drew the pelvic peritoneum over to the pelvic brim so we could wall off this area of the sigmoid. When we had finished the operation, the sigmoid had been pushed down extraperitoneally. A drain was left in the lower angle of the incision down behind the uterus. The patient was in fair condition.

We hoped at a later date to draw the bowel out through the vagina and perform an end to end anastomosis if possible. To have done anything more at the time would undoubtedly have caused the death of the patient.

For the first twenty-four hours the patient did fairly well, but the next day she commenced to vomit a small amount of greenish fluid. There was a good deal of abdominal distention.

On March 7, the patient was delirious, vomited frequently, and was very restless, tossing from side to side. On March 8, at 3:30 p. m., I performed an enterostomy, thinking there might be intestinal obstruction. The bowel was relatively smooth, but there was some infection low down in the pelvis. The patient died at 9 p. m.

Necropsy Findings.—A definite peritonitis existed. The rectovaginal growth consisted of typical adenomyomatous tissue, and the tumor that projected in the sigmoid near the pelvic brim and markedly constricted the lumen of the bowel also consisted of characteristic adenomyomatous tissue (Fig. 43).

Cuthbert Lockyer,⁵ in his excellent book on "Fibroids and Allied Tumors," gives us the best résumé of the literature on adenomyoma. In it, he refers at length to an interesting case reported by Robert Meyer.⁶ On referring to Meyer's article I found that the patient was 45 years of age, and that Professor Mackenrodt had performed a resection in 1907 as the patient had signs of stenosis of the bowel.

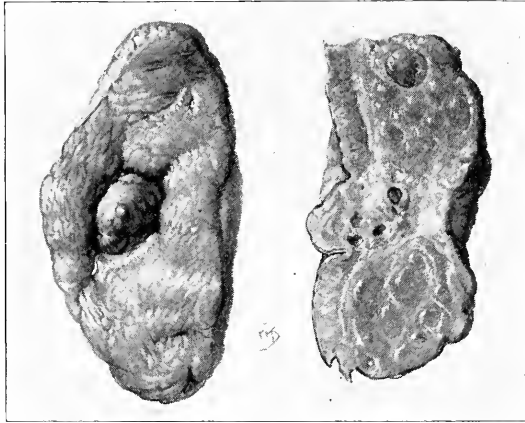


Fig. 47 (Case 17).—Adenomyoma of the umbilicus. Dr. Guthrie's case. Projecting from the umbilical depression is a small tumor. This was 1.5 cm. long. On section it was seen to contain several small cysts. Some of them were yellowish brown color. For the low power picture, see Figure 48. For the higher magnification, Figure 49.

The specimen consisted of a segment of the bowel 8 cm. in length. The bowel lumen over an area 1.5 cm. long was markedly narrowed, there being just a slitlike opening. The mesocolon at this point and also the overlying bowel mucosa were markedly thickened. In the mesocolon between the layer of fat and the muscular wall of the

5. Lockyer, Cuthbert: *Fibroids and Allied Tumors*, New York, the Macmillan Company, 1917.

6. Meyer, Robert: Ueber entzündliche heterotope Epithelwucherungen im weiblichen Genitalgebiete und über eine bis in die Wurzel des Mesocolon ausgedehnte benigne Wucherung des Darmepithels, *Virchows Arch. f. path Anat.* **195**:487, 1919.

sigmoid was an irregular fanlike connective-tissue tumor, diffuse in character, and strongly suggesting an adenomyoma. The tumor projected into the bowel and produced a folding of the overlying mucous membrane.

On histologic examination, the mucous membrane of the bowel over the tumor folds was found to have practically disappeared, the surface consisting of granulation tissue. The tumor consisted of adenomyomatous tissue.

Meyer's pictures leave no doubt that he was dealing with an adenomyoma of the sigmoid, an adenomyoma of a type resembling in nearly every particular that found in the uterus. This is the first case of this character that I have found any record of. It was clearly described in Cuthbert Lockyer's recent publication.

On Oct. 24, 1919, I received a most interesting letter from my friend, Dr. G. Brown Miller of Washington, D. C., the contents of which have a definite bearing on the association of adenomyoma of the rectovaginal septum with secondary adenomyoma in the sigmoid.

Mrs. P., aged 36, with no children, came to see Dr. Miller on June 26, 1919, complaining of profuse, prolonged and painful menstruation, pain in the pelvis and pain on defecation. She had recently lost a good deal of weight but was still well nourished although somewhat anemic.

Vaginal examination showed the cervix to be large and hard, and a small polypoid tumor was protruding from the os. In the upper part of the posterior vaginal vault was an irregular, hard, nodular tumor mass the size of a walnut. It was intimately connected with the cervix, rectum and broad ligament. The rectal mucosa over the tumor was intact but was intimately adherent to the mass. The uterus was retroverted and moderately enlarged. A diagnosis of adenomyoma of the rectovaginal septum was made.

The patient was sent to the Columbia Hospital and was operated on a few days later. I was assisted by Dr. Neill. When more carefully examined immediately before operation the nodules in the vaginal vault were seen to contain small bluish cysts the size of a pin.

On opening the abdomen the first thing which attracted one's attention was a mass the size of a large lemon which was situated in the upper part of the rectum or lower sigmoid. This seemed to encircle the lumen of the bowel. The patient gave no history of hemorrhage from the bowel or of bloody stools. A total hysterectomy was performed. It was a difficult operation on account of the fixation of the uterus. In attempting to separate the growth from the rectum, an opening was made in the bowel after which the whole involvement of the rectum by the tumor was cut away and the rectum was sutured.

No attempt was made to resect the growth in the sigmoid. The patient left the table in bad condition. Her pulse was rapid and she was much shocked. She improved and the next day was much better. I left town the following day and was hopeful that she might recover, but learned from Dr. Neill that about eight or nine days after the operation she apparently developed peritonitis and soon died.

Mahle and MacCarty⁷ report a very interesting case of adenomyoma of the sigmoid observed in the Mayo Clinic:

CASE 4.—The adenomyoma of the sigmoid occurred in a patient, aged 31, who had been married eleven years and pregnant once. She had had an appendectomy, salpingectomy, and partial oophorectomy performed elsewhere. At that time she was told that she had a tumor of the lower bowel which would



Fig. 48 (Case 17).—Adenomyoma of the umbilicus. This is a low power picture of the umbilical tumor seen in Figure 47. The surface is covered with normal skin. Scattered everywhere throughout the tumor are glands, many of them cystic, and not a few surrounded by a definite stroma that stains rather deeply. For the higher power, see Figure 49.

become a cancer. She presented herself at the clinic because of this tumor. Roentgen ray of the colon, and a proctosigmoidoscopic examination proved negative.

7. Mahle, A. E., and MacCarty, W. C.: Ectopic Adenomyoma of Uterine Type (A Report of Ten Cases), *J. Lab. & Clin. M.* 5:221 (Jan.) 1920.

At operation a tumor mass was found encircling the sigmoid, involving a segment of the bowel 4 cm. in length. The sigmoid and the bladder were adherent to a mass around the uterus. Twelve centimeters of sigmoid were removed as well as "tarry" cysts of both ovaries.

Histologic examination of the sigmoid growth showed the characteristic picture of adenomyoma. Mahle and MacCarty refer to an adenomyoma of the sigmoid observed by Leitch.

Further studies will undoubtedly bring to light other cases and it is highly probable that some cases heretofore considered to have been cancer were as a matter of fact adenomyomas.

ADENOMYOMA OF THE RECTUS MUSCLE

These growths are exceedingly rare. Dr. William F. Shallenberger of Atlanta kindly sent me a résumé of the history of his case on Nov. 8, 1919.

History.—Mrs. C. E. D., aged 34, had been married more than ten years. Nine and a half years ago she had an abortion. Curettage was performed for retained membranes and the dilator passed through the retroflexed uterus at the cervical uterine junction. The body of the uterus was torn half loose from the cervix before the accident was discovered. The patient evidenced considerable shock, was rushed to the hospital, the abdomen was opened and the damage repaired.

Dr. Shallenberger also learned that the patient had a second pregnancy eight years ago. She went to term, had a normal labor but following labor a hematoma developed in the left broad ligament and vaginal wall. This had to be opened through the vagina. The patient's health has been very good since the last labor, aside from a slight attack of cystitis three years ago and a streptococcus infection of the foot six months ago.

The menstrual history was normal in every way.

Present Illness.—Three days ago the patient noticed a little soreness in the lower abdomen just to the left of the lower angle of the abdominal scar (Fig. 44). On feeling this area she noticed a small tender swelling. She thought that a hernia was developing.

On inspection there was a slight fulness just to the left of the midline and slightly above the symphysis. On palpitation a small firm nodule could be felt apparently in the belly of the rectus muscle. This did not seem to be associated with the scar of the incision and there was no impulse on coughing or straining, and the nodule did not increase in size when the patient stood. Dr. Shallenberger thought he was dealing with a hernia or with a dermoid tumor of the rectus muscle.

Treatment.—The patient was put to bed and an ice cap was placed over the lower abdomen. The pain and soreness were not relieved and the nodule apparently increased somewhat in size during the next four days. Dr. Shallenberger then decided to remove the nodule. The entire lower end of the left rectus was removed. The tumor was about 2.5 to 3 cm. in length, about 1.5 cm. in breadth and 1.5 cm. thick. It had no definite capsule.

On cutting into the tumor Dr. Shallenberger found that it presented a dark grayish mottled appearance and that it was firm and fibrous in character.

The operation was performed eleven months ago and the patient made an uneventful recovery.

Sections from this growth sent to me by Dr. Shallenberger consist of nonstriped muscle. Scattered throughout this are areas of characteristic uterine stroma containing normal appearing uterine glands (Figs. 45 and 46). The cavities of some of the glands contain blood and in the stroma at some points is brown pigment.

The tumor in the case reported by Dr. Shallenberger is without doubt an adenomyoma occurring in the left rectus muscle. It is the first one of this character that I have ever heard of. From its location it could not for a moment be confused with adenomyoma of the round ligament which, although it presents exactly the same histologic picture, is usually situated at or near the external or the internal ring.

Mahle and MacCarty⁷ record two cases of adenomyoma of the abdominal wall:

CASE 2.—This patient, aged 30, complained of a tender lump, of two years' duration, in the lower abdominal wall, under a previous laparotomy scar. The lump was painful at the time of menstruation.

On examination a palpable mass, 3 cm. in diameter, was found beneath the lower end of a median laparotomy scar; this was hard, nodular and painful to touch. It was apparently not attached to the uterus, and clinically, was thought to be a fibrous tumor in a previous laparotomy wound.

At operation, the mass was removed; it extended through the abdominal muscles, and was attached to the left tube about 4 cm. from the uterine horn.

CASE 3.—This patient, aged 46, had had a ventral suspension performed several years before and had been pregnant nine times, the last pregnancy occurring ten years before. She complained of lumps in the abdominal wall, which she had noticed for the last year. These lumps had not grown noticeably larger but had always been painful following menstruation.

On examination, a mass was found in the suprapubic region, apparently in the abdominal wall, movable with it, and possibly connected with the fundus of the uterus. Clinically, it was thought to be a fibrous growth, attached to the abdominal wall on a previously ventrosuspended uterus.

At operation, the fundus of the uterus was found attached to the abdominal wall. The tumor, 8 cm. in diameter, was situated to the right of the midline, and extended down to the right side of the uterus. It was solid, with glandular, cystic areas filled with black pigment. Because of its extension into the retro-peritoneal tissue, and apparent inoperability, only a piece of tissue 6 cm. in diameter, was excised for diagnosis.

ADENOMYOMA OF THE UMBILICUS

From time to time a small thickening has been noted at the umbilicus in women during the child-bearing period. In some of these cases, the tumor has increased in size perceptibly at the menstrual

period, and in a few there has been a discharge of blood from the umbilicus at the period. Occasionally, small bluish black cysts have been noted in the tumor.

Adenomyomas of the umbilicus are always small. On histologic examination, they are found covered over with normal skin. They consist of fibrous tissue and nonstriated muscle, and scattered through-



Fig. 49 (Case 17).—Adenomyoma of the umbilicus. This section is from the umbilical nodule seen in Figure 47. In the center of the field is typical uterine mucosa. Some of the glands are dilated.

out this are islands of typical uterine mucosa. When the history is characteristic, the diagnosis can be made with ease.

It is not necessary for me to discuss this subject in detail, as I have devoted an entire chapter to adenomyomas of this region in my book on the umbilicus.

Removal of the umbilicus is all that is essential in these cases. I shall report briefly on the specimens of two cases of adenomyoma that have recently been sent me for examination.

CASE 17.—*Adenomyoma of the umbilicus* (Figs. 47, 48 and 49).

History.—The specimen was sent me by Dr. Donald Guthrie of the Robert Packer Hospital, Sayre, Pa., in March, 1919. Dr. Guthrie says:

"The patient is 46 years of age. She has had two children—the youngest 16 years of age. Menstruation has been regular. The patient has experienced severe pain around the umbilicus at the menstrual period. She has noticed this for two years, and at this time discovered an enlargement of the umbilicus. She never has had any discharge from it. At the menstrual period when the

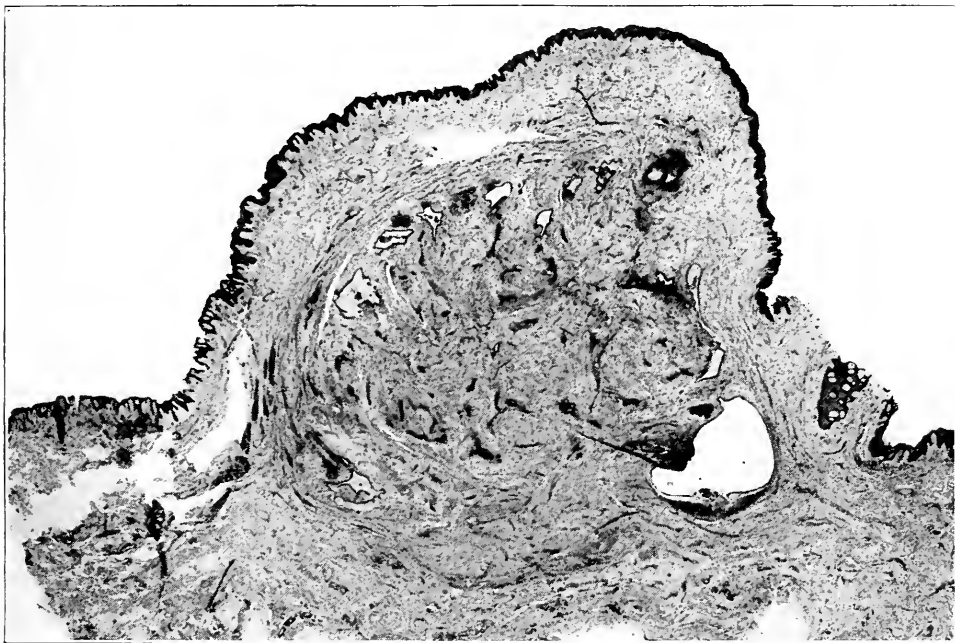


Fig. 50 (Case 18).—Adenomyoma of the umbilicus. The specimen was sent me by Dr. Lester Adams. The overlying skin is normal. The tumor is sharply circumscribed, has a whorled appearance, and has scattered throughout it cystic spaces and dark areas, some of them with glands in their centers. For the histologic picture, see Figure 51.

umbilicus was paining her, the patient experienced some inflammatory symptoms of the bladder. She has become very nervous and fearful that she has a cancer."

Dr. Guthrie sent me the specimen shortly after its removal.

Examination of Specimen (Gyn. Path. No. 24792).—The specimen consists of the umbilicus and of the adjoining skin. The umbilical depression is filled with a small growth 1.5 cm. in diameter (Fig. 47). This on section appears firm, but scattered throughout it are a few cystic spaces, some of them yellowish brown—cancer was suspected clinically.

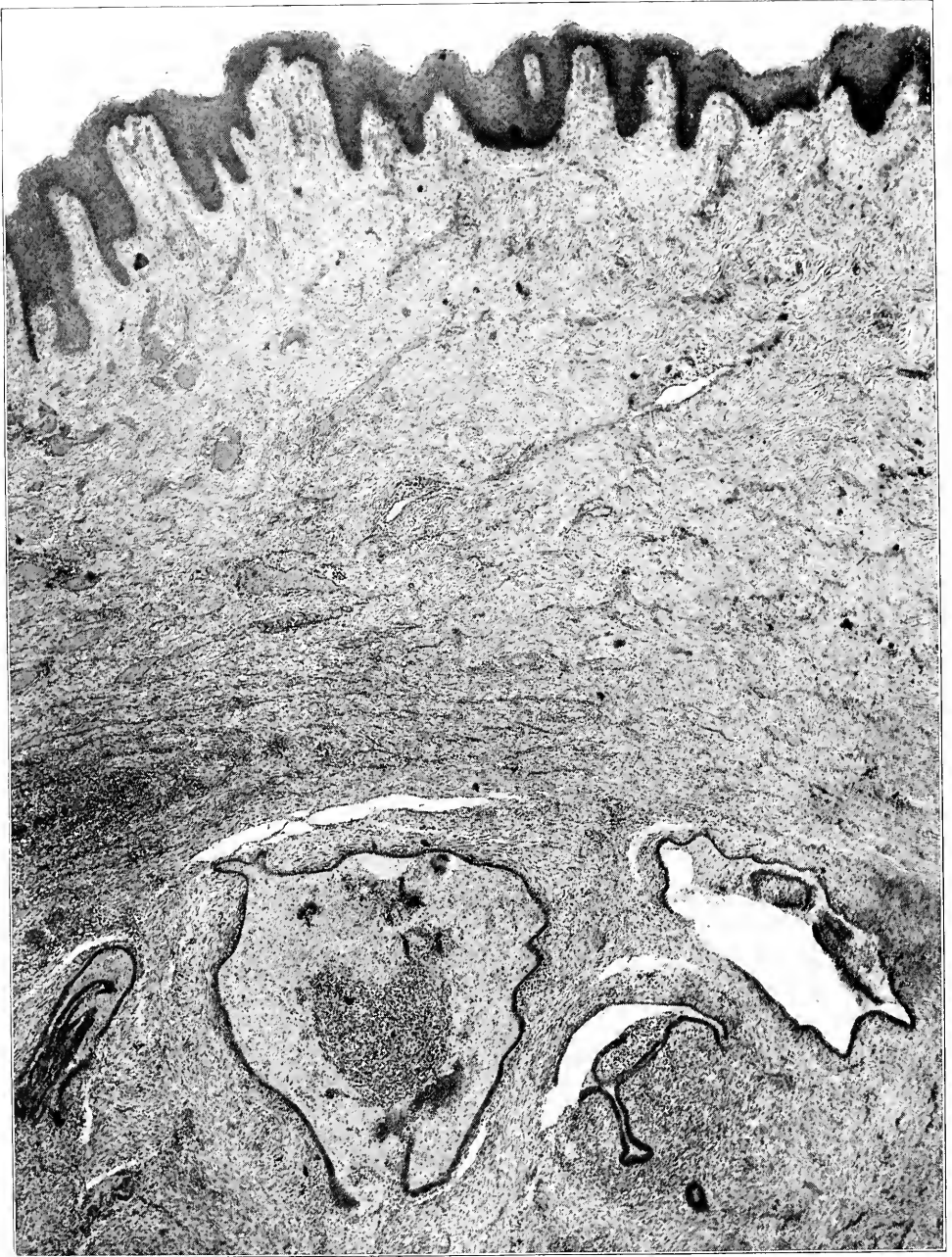


Fig. 51 (Case 18).—Adenomyoma of the umbilicus. The overlying skin is normal. Some of the glands are partially surrounded by a definite stroma, others lie in contact with the myomatous tissue. For the low power picture, see Figure 50.

Histologic Examination.—The low-power picture is well shown in Figure 48. The free surface is covered with normal squamous epithelium. The greater part of the tumor is made up of colonies of glands embedded in a definite stroma. Quite a number of the glands are dilated and filled with grayish or brownish material. Here and there is a perfectly definite miniature uterine cavity.

With a higher power it is seen that the matrix of the tumor is made up of connective tissue with bundles of nonstriated muscle scattered liberally throughout it. Everywhere throughout the tumor are glands. Some are minute and lie in direct contact with the muscle; others are larger and embedded in a rarefied stroma. Many occur in groups and are embedded in a stroma identical with that of the uterine mucosa (Fig. 49). This mucosa is in some places so arranged that miniature uterine cavities occur. Some of the gland cavities are filled with blood, and here and there throughout the stroma of the growth are areas of yellowish brown pigment—the remnants of old menstrual blood. One could not wish for a more beautiful example of an adenomyoma of the umbilicus.

CASE 18.—Adenomyoma of the umbilicus (Figs. 50 and 51).

History.—This specimen was sent me by Dr. Lester Adams of the Eastern Maine General Hospital, Bangor, Me. M. G., aged 37, was under the care of Dr. Hunt. An umbilical growth was removed on Nov. 8, 1916. About a year before the operation she had noticed pain at the umbilicus at the menstrual period, but at no other time. There was some increase in size of the umbilicus at the periods. Recently the pain and tenderness in the umbilical region had increased markedly.

Examination of Specimen (Gyn. Path. No. 22657).—The specimen consists of a growth, 1.3 cm. in diameter, occupying the umbilical region. On section it is very dense, but at two points are small cysts, the larger being 2 mm. in diameter.

On histologic examination, the overlying skin is found to be normal (Fig. 50). The tumor growth is made up of nonstriated muscle and fibrous tissue. Scattered throughout the tumor are large numbers of glands, some occur singly and lie in direct contact with the muscle. The majority, however, occur in groups and are separated from the muscle by a definite stroma (Fig. 51). This at some points is rarefied, but in other places is identical with that of the uterine mucosa. In at least one place is a miniature uterine cavity. Some of the glands are filled with blood, others with exfoliated epithelium and debris. In the outlying portions of the tumor are colonies of sweat glands.

This is another example of adenomyoma of the umbilicus.

SUMMARY

From the foregoing, we have seen that adenomyomas, consisting of a matrix of nonstriated muscle and fibrous tissue with typical uterine mucosa scattered throughout, are to be found in the uterus, rectovaginal septum, tubes, round ligaments, utero-ovarian ligaments, uterosacral ligaments, sigmoid flexure, rectus muscle and umbilicus, and that we occasionally find large quantities of normal uterine mucosa in the ovary. Adenomyomas form one of the most interesting groups of muscle that we have to deal with in the female pelvis.

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Distribution of adenoviruses

RG 371

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